THE IRON AGE

A Review of the Hardware, Iron, Machine[illegible]al Trades.

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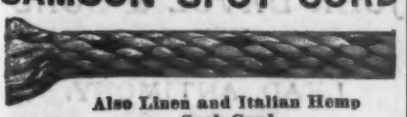

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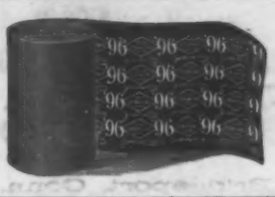

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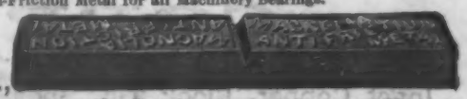

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THE IRON AGE

THURSDAY, DECEMBER 1, 1904.

The Shaw Electric Crane at the World's Fair.

The crane which was installed in Machinery Hall at the World's Fair in St. Louis by the Shaw Electric Crane Company, Muskegon, Mich., has a number of special features which make it interesting, particularly as it has lately been awarded the grand prize in Group 64. The capacity of the main hoists of the crane is 120,000 pounds, and the auxiliary hoist attached to one of the main hoists has a capacity of 10,000 pounds.

A general view of the crane as it appears in service is shown in Fig. 2. For the purpose of illustrating the special features alluded to, a number of detailed views are given in the succeeding figures. Fig. 1 shows an end

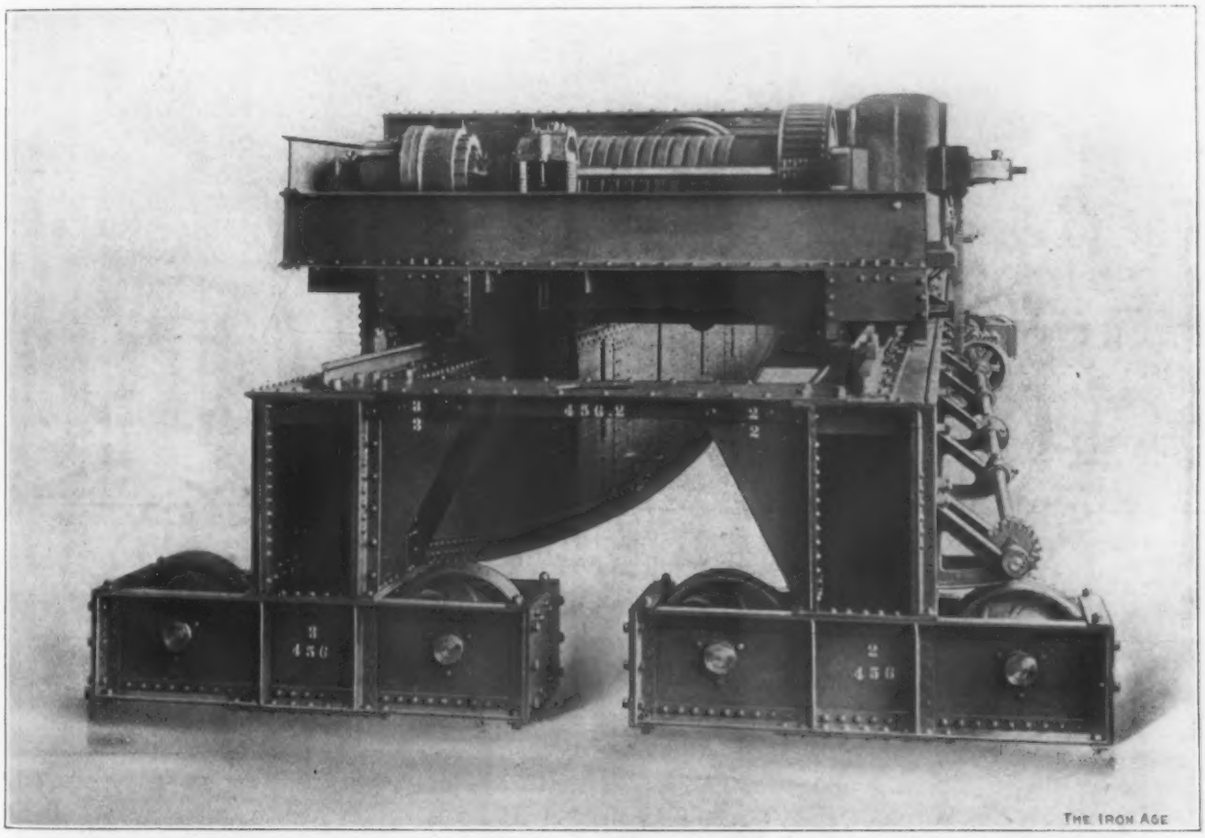

Fig. 1.—End View of the Bridge and One of the Trolleys

view of the bridge with trolley in place on the bridge. This indicates the manner of constructing bridges of cranes which require four wheels at each end, as was the case with the crane at the Louisiana Purchase Exposition. The five motors of this crane are controlled by as many controllers, these being mounted in the operator's cage.

Fig. 3 is a front view of the main hoist trolley which carries the 5-ton auxiliary hoist. The other trolley is in all respects similar to this one with the exception noted before, that it has no auxiliary hoist. This engraving illustrates admirably the compact arrangement of the parts, the extremely small amount of head room required and the well protected location of all parts in any way liable to injury. It is also of interest in showing the admirable disposition of the wiring. Fig. 4 is a rear view of the same trolley and with Fig. 3 brings out forcibly the maker's claim of ready accessibility of all operating parts.

Fig. 5 shows a spring chock, or buffer, which is put on each end of the bridge for stopping the trolleys, and on the runways for stopping the crane. Its purpose is to arrest the momentum of the moving masses without the severe shock which would occur with a rigid buffer. Fig. 6 is a detail of a motor brake and its operating solenoid, which retards the drift of each motor and brings it to rest immediately upon the cutting off of current from the motor. Two of these band brakes may be seen in Figs. 3 and 4 in their connection to the main and auxiliary hoist motors. The load brake with the pawl operating strap is shown in Fig. 7, which also shows the drum of the motor brake with the band removed.

A detailed description of the operation of the brakes is of interest. The motor brake is applied by the weight of the solenoids acting through levers. When the current is cut off the solenoids drop and apply the brake. The upper yoke of the solenoids carries a cylinder which works upon a piston having a small hole through it. This retards the falling of the solenoids upon cessation of current through the coils, to prevent a too sudden application of the brake, which would result in a shock to the machinery, and is a feature peculiar to the Shaw cranes. The brake has a flexible strap lined with wood blocks, and is arranged so as to operate in either direction. In high speed cranes, the motor, running in the hoisting direction, will raise the empty block or a light load quite a distance after the current is shut off, unless the motor brake is applied; and the ordinary strap brake, having only one end fast and the other attached to a lever, will stop the revolution of the brake wheel only

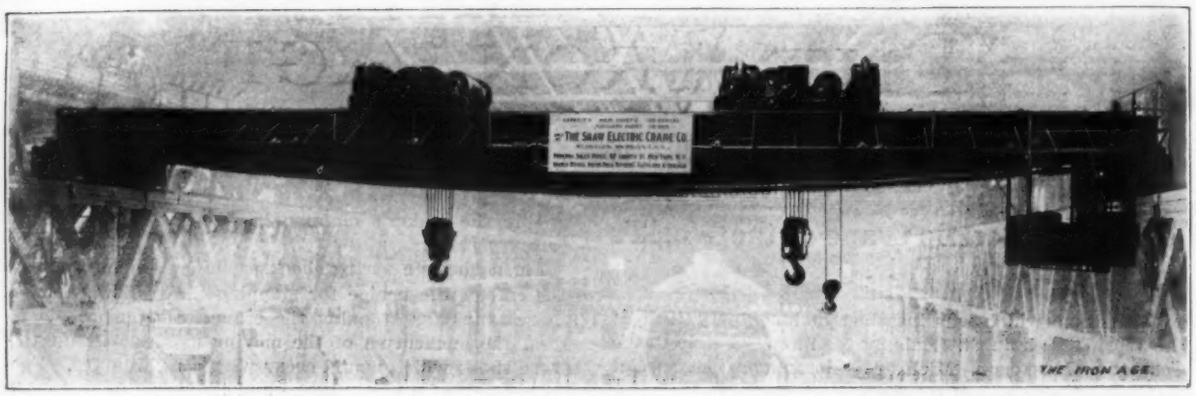

Fig. 2.—General View of the Crane in Machinery Hall.

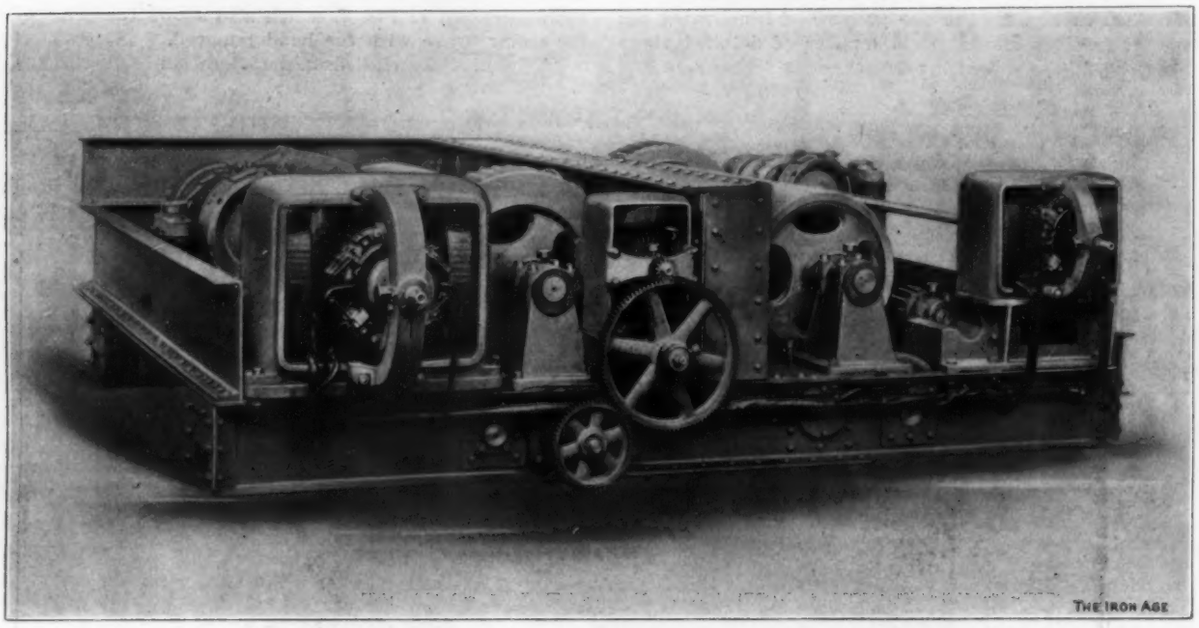

Fig. 3.—Front View of the Main Hoist Trolley Carrying the Auxiliary Hoist.

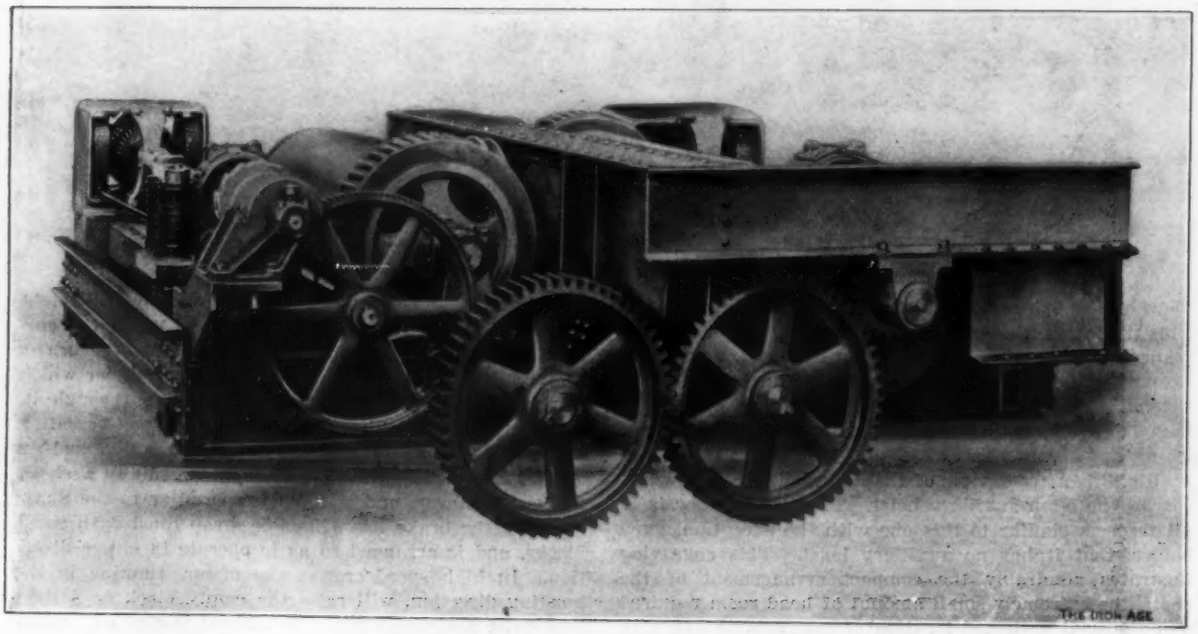

Fig. 4.—Rear View of the Main Hoist Trolley Shown in Fig. 3.

in the direction in which it runs when the load is descending. This brake is designed so that either end may become the fast end and the other end the weighted end automatically, depending upon the direction in which the shaft is revolving.

The load brake is of the usual coil type. The driving pinion is keyed to a sleeve which carries a flange, and to this flange is fastened one end of a bronze coil. The other end of the coil is fastened to an elongated flange, or drum, which, in turn, is keyed to the brake shaft proper, which is the driving element. The weight of the load and the torque of the motor when exerted in the hoisting direction expand the coil inside the casing. The casing is held from turning in the lowering direction by the pawls, which are operated noiselessly by the friction straps. In hoisting, the entire brake forms a friction coupling, which is a common feature of practically all load brakes. In lowering, the motor removes the coil turn by turn from its contact with the casing until the friction surface has been sufficiently reduced to allow the load to slip the remaining portion. The descent of the load tends to expand more of the coil into the casing; but the continued revolution of the motor in the lowering direction holds the amount of coil in contact with the casing constant, and the load, therefore, descends only as fast as the motor is run in the lowering direction. It is impossible for the load to drive the motor or to accelerate unless the speed of the motor is allowed to accelerate.

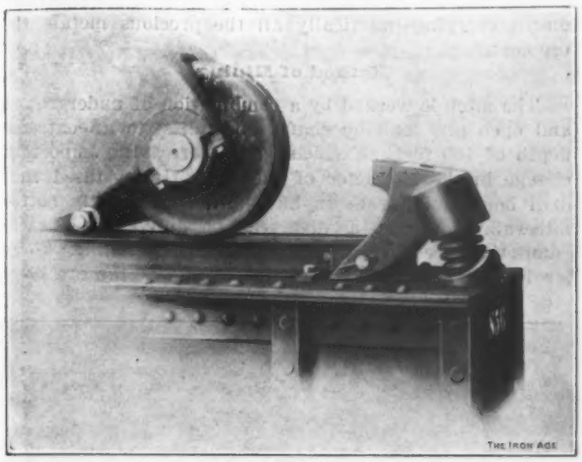

Fig. 5.—One of the Spring Chocks, or Buffers, at the End of the Bridge.

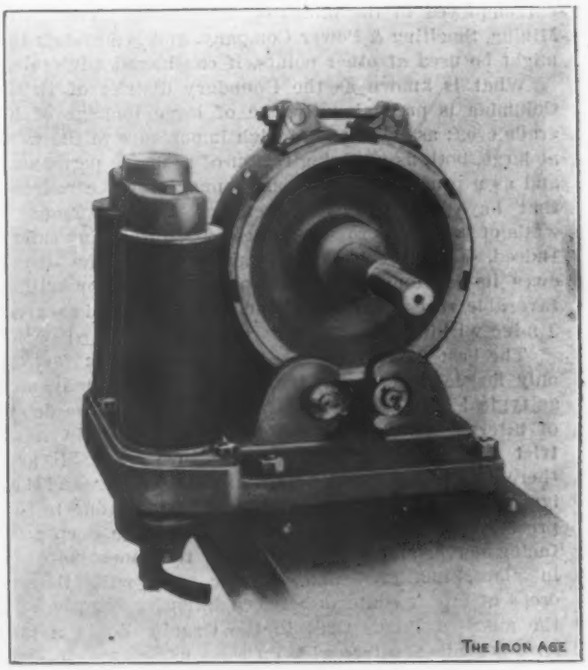

Fig. 6.—One of the Motor Brakes and Its Operating Solenoid.

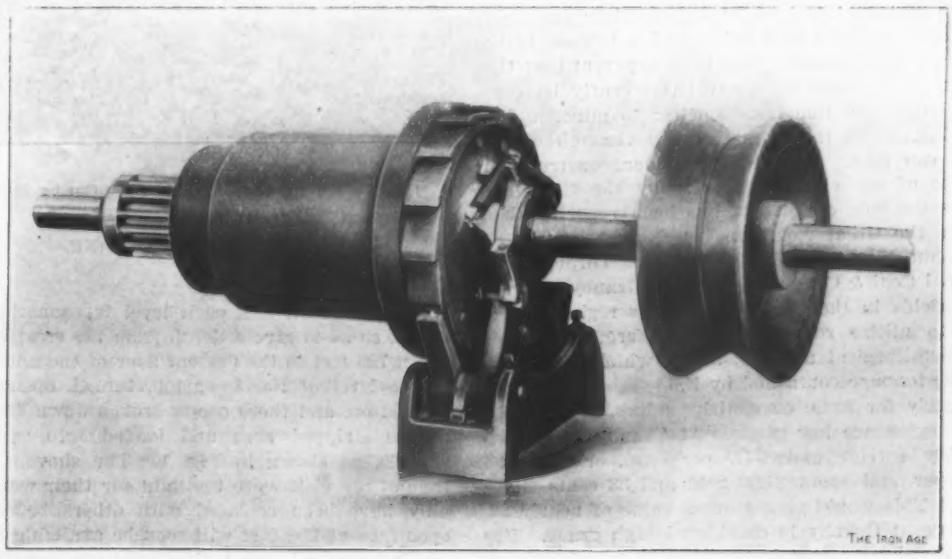

Fig. 7.—One of the Load Brakes and Its Pawl Operating Strap.

In an address on "Electricity from Water Power," before the British Association for the Advancement of Science, figures were given for the installation in the various countries. The United States heads the list, with 527,500 horse-power. Canada, 228,000; Italy, 210,000; France, 161,000, and Switzerland, 133,000, follow in the order named. No other country reaches 75,000, and Great Britain has only 12,000. The grand total given is 1,483,390 horse-power. It is estimated that if these plants are operated 12 hours per day the coal saved amounts to 11,720,000 tons annually, at a value of $30,000,000.

Scottdale Works No. 2 of the American Sheet & Tin Plate Company at Scottdale, Pa., which has been idle since last May, was started up last week. The plant contains eight hot sheet mills and three cold mills, and has an annual capacity of 27,500 tons of sheets.

The Granby Copper Mine.

BY DWIGHT E. WOODBRIDGE.

Location and Special Features.

"Mining copper ore with a steam shovel" has a rather revolutionary sound, but it is one of the processes at present employed in the mines of the Granby Consolidated Mining, Smelting & Power Company, and is a system that might be used at other points, if considered advisable.

What is known as the Boundary district of British Columbia is pre-eminently one of large tonnage of low grade ores; as such it is of high importance to the world at large, both as a mining region of probable permanence and as a producer of immense tonnage for the railroads that have courageously penetrated its vast mountain walls of rock and crossed its deep and forbidding cañons. Indeed, it is largely to the railroads that the district owes its existence as an important camp, for without favorable rates on ore out and fuel in there is scarcely a mine within its limits that could operate.

The best developed mine in the district—in fact, the only large property—is the Granby, and it may serve as typical of the rest. This mine is an immense deposit of altered limestone between diorite walls, in a district of great disturbance, where in very small areas there are to be found almost all the earlier and later igneous rocks, with the crushing and folding due to their presence. Granby is on the south side of a deep gulch, facing north, and across the draw the limestone cap is in place, unaltered and massive, and with the outcrops of ore at contacts between intrusive eruptives and the mass of lime. Ores in the Granby lie in a great lens, perhaps 200 feet wide on the surface, with a strike nearly north and south, running over the top of the hill rising out of the gulch, and extending for about 5000 feet to the south. Its dip is to the east, and as depth is attained the foot wall pitches more steeply than the hanging, so that at about 400 feet down there is a horizontal width of nearly 400 feet. Diamond drill borings have shown the ore to extend to a considerably greater depth, but no mining has been done below 400 feet. This is an enormous mass of ore, and no estimates that I have seen do justice to the tonnage actually in sight by openings and explorations. It is certainly sufficient to provide 4000 to 5000 tons daily, which is soon to be the output, for many years. This is so apparent that the Great Northern Railway Company has recently let contracts for building a line from smelter to mine, a distance of 17 miles of the worst country through which a railroad can pass. This line is under construction. At the time of my visit to the Granby the Canadian Pacific was the sole outlet. It has been reported that Mr. Hill of the Great Northern has bought control of the mine, but this is explicitly denied. Through the International Coal & Coke Company the Granby controls large coal fields in the Crow's Nest Pass region. It is able also to utilize some outside auriferous ores for a proper metallurgical mixture, all of which add materially to the tonnage controlled by it.

Fortunately for some competitive mines, ores of the Boundary region are low grade. At Granby they average probably a trifle under 1.7 per cent., or 30 to 34 pounds copper, and about $1.60 gold and 33 cents silver to the ton. This would give a gross value of nearly $6, and a $6 ore at Granby is considered high grade. For the entire district the average is 25 to 35 pounds copper, 25 to 40 cents silver, and $1.50 to $2.50 gold per ton. In the Greenwood portion of the district the copper runs 22 to 32 pounds, gold $2 and silver 22 cents; on the north side of Phœnix Gulch, across the ravine from Granby, $1.80 copper, $2.40 gold and 25 cents silver.

Fortunately for Granby, its copper is exceptionally pure, carrying very little of any deleterious elements. Happily, also, it can get a metallurgical mixture by which every ton of material entering the furnace, except coke, contributes its share to product. Ores mined in the main part of Granby contain from 35 to 45 per cent. silica, 15 to 20 per cent. iron, about 16 per cent lime and 3.5 to 4 per cent. sulphur. In addition to this some ores are brought in from other parts of the district. The ore is of a magnetitic type, in which chalcopyrite, magnetite and some pyrite are chief minerals. Oxidation has not been deep, at least is not so now, after tremendous glaciation and erosion, but where it ceases the ores change slightly, the iron being largely combined, and a proper mixture of these upper and lower ores produces an ideal charge, enabling the furnaces to produce a 45 per cent. matte, carrying practically all the precious metals the ore contains.

Method of Mining.

The mine is worked by a combination of underground and open pits and by shafts and adits to an extreme depth of 400 feet, at which point there is no important change in the character of the ores. It is stated that drill borings lower down have shown a slightly better mineralization for a distance, possibly sufficient to counterbalance the added costs of deeper working. Four levels have been driven along the strike of the ore body

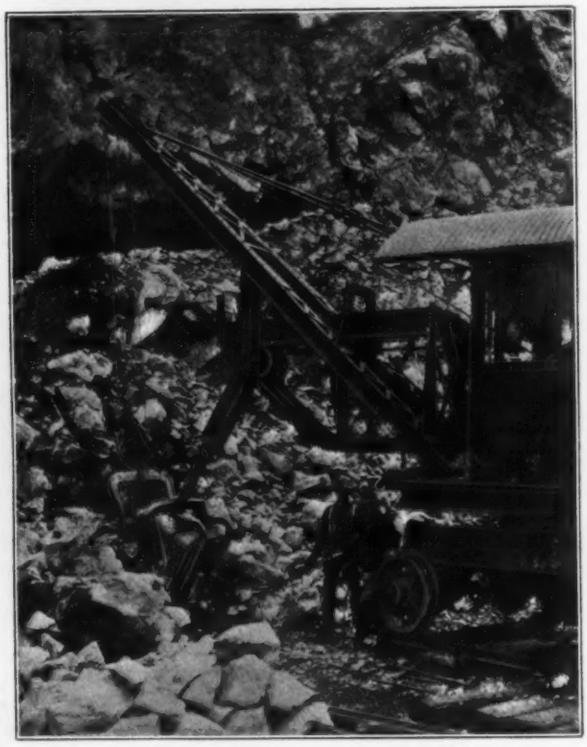

Fig. 1.—Mining Copper Ore in Open Cut by Steam Shovel.

THE GRANBY MINE.

about 1500 feet, and each level is connected with that above, so as to give a depth from the crest of the hill of about 725 feet to the present floor of the mine. Above and at the level of No. 1, or top, tunnel, open cut work is carried on, and there ore is broken down from the sides of the stripped area and loaded into cars by steam shovels, as shown in Fig. 1. The shovels used at the time of my visit were too light for their work, and probably have been replaced with others before this. An open face of 200 feet will soon be available for breaking.

Underground two main shafts are operated, the deepest 400 feet, and from these some 1000 tons of ore are hoisted daily, the remainder of the mine's product being from the open cut. The total daily product is in the neighborhood of 1800 tons, which, with small additions of custom ore, is the capacity of the company's smelter. Plans have been prepared for doubling this smelter, and the mine is being prepared for an increase to correspond.

Mining underground is by the pillar and stope system, and no word but "enormous" will properly characterize the size of the openings. They extend from level to level in vast caves, with but a trifing support in the way of timbering. The ore holds up so well that no

danger is felt in leaving these openings large, and an occasional pillar is all that is needed. The company's Knob Hill, Old Ironsides and Victoria mines are all extensively developed and have an up-to-date working plant. Conditions are most favorable and mining costs are very low. Underground they make raises about 25 to 30 feet apart in the levels, which are run on an average about 12 feet above the roof, or to a hight of some 25 feet from the floors. After these raises are made they are connected at the top by a subdrift made at right angles and connecting all—that is, another level is opened with 12 feet of floor. This avoids much timbering. Chutes are put in at the mouths of the raises with slopes of 35 per cent. and an opening 36 inches square. They are fitted with cycloidal gates. After these upper drifts are connected miners go up at an angle of 45 per cent., with a regular stope for 25 to 30 feet, and cut across again in the same manner as below, leaving pillars between the stopes some 25 feet or less in diameter.

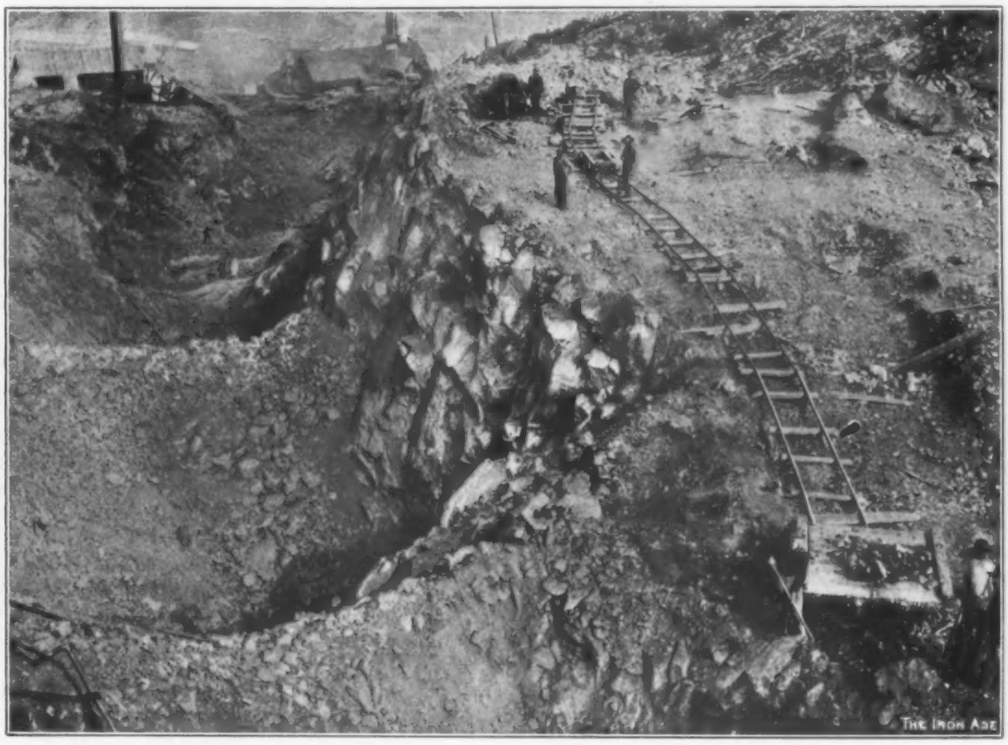

Fig. 2.—Stripping the Open Cut Above the Underground Workings.

THE GRANBY MINE.

They then run back in the opposide direction above the flow of the other stope, and cut under the bottom, leaving a ridge in the stopes so that what ore will not fall into one chute will go into that opposite. In the meantime they are opening above for steam shovel mining, Fig. 2, and intend to finally get the shovels down on these lower floors. An average of about 4½ tons per day per man about the mine is the product, 400 men being worked for the daily output of 1800 tons. This is an excellent record. Mining costs are said to be materially under $1.50 a ton.

Power for mining is derived from the company's plant on the Kettle River and from the works of the Cascade Power Company, 28 miles away. About 1500 horsepower is used at the mine, a fourth of what the Cascade fall is capable of. A fine overhead line conveys power from Cascade to mine and works at a voltage of 20,000, and that is stepped down at the mine to 2000. Two 700 horse-power Westinghouse induction motors drive a pair of 30-drill Canadian Rand compressors. About 40 per cent. of all the ore mined passes through a jaw crusher, that takes chunks of 30-inch cube and reduces them to 7 and 8 inch cube. The company has installed steam locomotives, hauling five to eight cars each, in two of its tunnels, in place of other methods of tramming. It is the intention to drive a tunnel from Boundary Creek, four miles away, for a double track railroad, to tap the ore body at a depth of about 4000 feet. If ore is found at this depth—and it can hardly be expected that the management would undertake this work without knowing where the ore is—the reserves of this mine will far exceed in magnitude those of any copper property in the world.

The Smelter.

The Granby smelter is one of the three or four largest on the continent in the amount of ore it actually puts through furnaces daily, though, of course, its daily tonnage is far exceeded by plants having both smelters and reverbatories, as at Anaconda, or mills and smelters, as at Calumet. As intimated above, the ore is practically self fluxing, basic in character, and being low in sulphur requires no roasting. It carries no arsenic, bismuth, antimony or other injurious elements. The percentage of coke used is from 11 to 13. The works make a matte varying from 45 to 50 per cent and put this direct into Bessemer converters, blowing the product up to blister copper 99 per cent fine, and carrying practically all gold and silver contained in the original ores. This is increased by the converter lining, which is composed of clay and auriferous silicates from the Republic district. There are six rectangular water jacketed furnaces 42 x 160 inches, and these have been averaging 300 tons of ore each per 24 hours. Their biggest run has been 2300 tons of ore and their daily product is averaging 25 tons of copper. One furnace has taken up to 391 tons of ore in 24 hours. These furnaces are set with their widest diameter at right angles to their line and are fed mechanically. To each two furnaces there is a charging car arranged similar to those in common use in lead furnaces, carrying 2 tons of charge, with coke. These cars run into a depressed chamber, where they are filled and are handled by individual cables attached to drums operated electrically. The slag carries 46 per cent. SiO_2, 17 per cent. Fe, and 21 per cent. CaO, and from 0.3 to 0.35 per cent Cu. Smelting costs are probably $2 a ton. Electric power for the smelter is derived from the same works as for the mine.

There are two converter stands of the horizontal barrel type, 72 x 100 inches in size. The converters are tamped by hand. The smelting and converting plants are to be enlarged to a capacity of about 4000 tons a day, and work on this improvement will probably begin this year. These plants are located at the Grand Forks of the Kettle River, where there are ample room and power, and the location is one of great natural beauty and attractiveness. It is connected with the outside world by the Columbia & Western Railroad, belonging to the Canadian Pacific, and by the Spokane Falls & Northern, a part of the Great Northern system, and is in the heart of the Cascade Mountains. The smelter is in a valley where in early May prune trees were in blossom and farmers were digging the potatoes they had left undug in the ground all winter, while at the mine, 15 miles away, there was still 8 feet of snow. The mine is at an elevation of 4650 feet and the smelter of 1710 feet.

The Granby is capitalized for $15,000,000, of which all but $1,650,000 has been issued. A year ago it began the payment of 1 per cent. quarterly dividends. Almost from the beginning mining has been under the charge of W. Yolen Williams, and the smelter was built and has been operated by A. B. W. Hodges. Last year several Eastern copper men, including John Stanton, W. H. Nichols and Jacob Langeloth of New York and W. A. Paine of Boston, became heavily interested in the mine. Jacob Langeloth has been elected president of the company. Jay P. Graves of Spokane, who was among the original owners, is general manager, and Northrup Fowler is secretary of the company.

Other Boundary District Mines.

Aside from Granby, several more or less important mines are operated in the Boundary district. Of these only the British Columbia Mother Lode and the Snowshoe are of much present importance. The British Columbia Copper Company, owning the Mother Lode, has a two-furnace smelter at Greenwood. This was formerly an A. P. Heinze flotation. Mother Lode ore is quarried in an open cut and dropped down mills to pockets above a tunnel, a very cheap method of mining and quite similar to the milling system of the Mesaba iron ore range. The British Columbia Chartered Company's mine carries double the copper tenor of most mines of the district, but is a smaller lode. The Boundary Falls smelter of the Montreal & Boston Company also consists of two furnaces and is chiefly a custom plant. These are the only smelters and the larger mines of the region. The Hall Mining & Smelting Company, with a small furnace plant at Nelson, B. C., operates the Emma mine in the Boundary district as a great open cut. The company produces a lead-copper matte carrying gold and silver, and the Emma ore is very desirable for a smelting mix, assisting materially in rapidity of reduction. A few miles east of Boundary are the Rossland mines, of which Le Roi is easily first. One might almost paraphrase a famous remark and say there is no second. Le Roi ores have been decreasing in value and increasing in tonnage with depth, and now average about $10.40 in copper, gold and silver per ton. The mine is 1350 feet deep and shows reserves valued at about $6,500,000 gross. Its production is about 150,000 tons a year through a smelting plant consisting of three calcining and six 250-ton water jacket furnaces.

Recent Boston publications have stated that the Granby, "with economical and scientific management, might become a large and successful property." This is merely the slur of ignorance, and is unjust and unmerited. These low grade mines, in a far off and inaccessible region, where 25 to 30 per cent of the cost of everything is the freight that must be paid for bringing it in, are able to smelt at from $1.35 to $1.50, as the provincial geologist states that they do. This is ample justification of the men who are in charge, and shows that all the high grade metallurgists are not elsewhere. The same is true of the mining men, whose methods are decidedly up to date and perfectly adapted to their situation.

Steel Hardening Metals.

Report of the United States Geological Survey Upon Production in 1903.

WASHINGTON, D. C., November 26, 1904.—An elaborate report on the production and utilization of steel hardening metals, embracing the statistics for the year 1903, has been prepared for the United States Geological Survey by J. H. Pratt, and through the courtesy of the Director of the Survey the correspondent of *The Iron Age* is enabled to present the following abstract:

There are included under the head of steel hardening metals nickel and cobalt, chromium, tungsten, molybdenum, vanadium, titanium and uranium, which are named in the order of the importance of their production for use for steel hardening purposes. In this list manganese would naturally be included, but on account of its very extensive production and very large use in the purification of steel it is treated separately.

It was only about 20 years ago that the first of these metals, nickel, began to be used to any extent for the purpose of hardening steel, but since their introduction their use for this purpose has continued to increase steadily. Experiments are still being carried on with some of them to determine their actual commercial value with regard to the qualities that they impart to steel.

The prices of the various ferro alloys vary considerably. Ferrochrome in December, 1903, was quoted at $120 to $225 per long ton of 2240 pounds, cost, insurance and freight, New York, on the basis of 60 per cent., with variations up and down at $1.75 per unit. Ferrotungsten was quoted at 40 cents per pound, or $896 per ton, on 100 per cent., cost, insurance and freight, New York. Ferromolybdenum was quoted from $1.50 to $2.50 per pound, or $3360 to $5600 per ton, on 100 per cent., cost, insurance and freight, New York; in May, 1904, this had dropped to $1.25 per pound on 100 per cent., cost, insurance and freight, New York. Ferrovanadium was quoted at $7.50 per pound, or $16,800 per ton, on 100 per cent. in the English market, and $6.40 per pound in the French market; for ton lots the price has been quoted as low as $4.50 per pound. Ferromanganese has, during the last two or three years, been very steady, and on contract 100-ton lots and over was quoted at $50 per ton, duty paid, with freight paid east of the Mississippi River. In May, 1904, this price had dropped to $44 per ton. Ferronickel alloy and metallic nickel vary from 50 to 56 cents per pound for the nickel content.

Nickel and Cobalt.—These two metals are treated together for the reason that nearly all of the ores that contain one of them contain also a small percentage of the other, and in the reduction of the ores both nickel and cobalt go into the matte which is afterward refined. The main supply produced in the United States is from Mine La Motte, Missouri, where it is obtained as a by-product in lead smelting by the Mine La Motte Lead & Smelting Company. The production amounted in 1903 to 661 tons of matte. The nickel content of this matte was 114,200 pounds, valued at $45,900, and the cobalt oxide content was 120,000 pounds, valued at $228,000. This is an increase in production of 108,452 pounds of nickel and 116,270 pounds of cobalt oxide, as compared with 5748 pounds of nickel and 3730 pounds of cobalt oxide produced in 1902.

Chromium.—The only mineral that is being mined as an ore of chromium is chromite. The only State in the United States that is now producing any chromite is California. The North Carolina deposits, located near Burnsville, Yancey County, have recently been sold and are now being developed. Ferrochromium is made in an electric furnace and is produced directly from the ore. In the United States the company producing the largest quantity of ferrochromium is the Wilson Aluminum Company, whose electric furnaces are located at Kanawha Falls, W. Va. Besides the manufacture of ferrochromium this company also makes ferrotungsten, ferromolybdenum, ferrosilicon, ferrovanadium and ferrotitanium. The company obtains its chief supply of chrome

ores from the Daghardi mines, in Asia Minor, and the Thiebargi mines, in New Caledonia. There is only one State—California—that produced any chromite during 1903, the quantity being 150 long tons, valued at $2250, as against the production of 315 long tons, valued at $4567, in 1902. This is a decrease of 165 tons in quantity and of $2317 in value.

Tungsten.—Many localities have been discovered where these ores are found in greater or less quantity. Thus, far, however, none of the new deposits has been developed sufficiently to determine the actual amount of ore that they contain. It was found impossible during the latter part of 1903 to fill orders for 100 tons per month of tungsten ores, and none of the producers of these ores was willing to contract to furnish this quantity at the prices quoted of $180 to $200 per ton for a 60 to 65 per cent ore. The principal mining for tungsten ores during 1903 was in Colorado and in the vicinity of Dragoon, Ariz. These latter deposits have been developed quite extensively by the Primos Chemical Company. The production of crude tungsten ores in the United States during 1903 was 2451 short tons. Most of this ore was concentrated, and there were sold 292 short tons of concentrates, valued at $43,639, which is approximately $149 per ton. The prices varied from $110 to $250 per ton, according to the percentage of tungstic acid. This production was obtained from Colorado, Arizona and Connecticut, given in the order of the importance of their output.

Molybdenum.—The use of molybdenum steel continues to increase, and hence there is a growing demand for the ores of this metal. Ferromolybdenum is produced, like ferrotungsten, by reducing it from the ore in an electric furnace. There are now two molybdenum-nickel alloys being produced, one of which contains 75 per cent. molybdenum and 25 per cent. nickel, and the other 50 per cent. molybdenum and 50 per cent nickel. Besides these constitutents the alloy contains from 2 to 2.5 per cent. iron, 1 to 1.5 per cent. carbon and 0.25 to 0.50 per cent. silicon. The year 1903 saw a great deal of prospecting for these ores, with the result that a number of new localities were discovered that give promise of developing into large deposits. Wulfenite was discovered on the property of the Troy-Manhattan Copper Company, at Troy, Ariz., and after the deposit was opened and developed the company erected a 40-ton concentrating mill and is now preparing the concentrates for market. The deposit of molybdenum at Cooper, Me., has been developed very extensively by the American Molybdenum Company, and during the last year the company has erected a cleaning and concentrating plant for treating this ore. The production during 1903 amounted to about 6200 tons of crude ore, very little of which was treated and most of which is still lying on the dumps. Most of the wulfenite ore that was mined was concentrated, and these concentrates, together with the concentrates of the molybdenite, amounted to about 795 short tons, valued at $60,865. There is still wide variation reported in the prices of molybdenite ore, which range from $100 to $3000 per ton. It is more than probable that the actual value of molybdenum concentrates at New York will be in the neighborhood of $200 per ton.

Uranium and Vanadium.—On account of the extremely high price and scarcity of vanadium ores the metal has thus far been employed very little in the manufacture of ferrovanadium for use in the production of vanadium steel. Since the discovery of the deposits of vanadium in Colorado and Utah they have been thoroughly developed, largely through the efforts of A. B. Frenzel of Denver, Col. He now claims that a process has been perfected by which vanadium can be obtained at such prices that the ferrovanadium alloy can be manufactured so as to enter into competition with the other ferro alloys. The main source of supply of vanadium is Montrose County, Col. During 1903 the development work done upon uranium and vanadium deposits resulted in the production of 432 short tons of crude ore. Of this amount 30 tons of partially concentrated ore, valued at $5625, were sold. In 1902 the production of uranium and vanadium minerals, as reported to the Survey, amounted to 3810 tons, valued at $48,125. The 1903 production consists principally of the mineral carnotite, with a small amount of uranium.

Titanium.—Until the development of the electric furnace it was practically impossible to produce either titanium or an alloy of iron and titanium, but since the introduction of this furnace ferrotitanium can be produced directly from the ores. Ferrotitanium seems to be especially adapted to the manufacture of a special cast iron. The titanium in the iron gives greater density to the metal, greatly increases its transverse strength and gives a harder chill or wearing quality to a wheel made from such an iron. For the manufacture of car wheels it would seem that the titanium iron would be especially useful. A ferrotitanium has been manufactured by the Wilson Aluminum Company from a titanic iron ore from Caldwell County, N. C. W. L. C.

United States Steel Bonds.

The second mortgage 5 per cent. bonds of the United States Steel Corporation, says the *Wall Street Journal*, have as security the stocks and bonds of subsidiary companies amounting in par value to $679,381,394. These stocks and bonds represent the corporation's ownership of subsidiary companies out of a total outstanding of $680,281,600. They are all pledged as security first for the first mortgage bonds, $304,000,000, and next as security for the $250,000,000 second 5s authorized, of which only $170,000,000 are outstanding. The various issues pledged to secure the first and second mortgage bonds and the total amount of each are as herewith shown:

Stock outstanding.	Company.	Deposited as security.
$63,000,000	Carnegie Steel Company	$62,995,000
53,260,900	Federal Steel Company, preferred	53,260,900
46,483,800	Federal Steel Company, common	46,483,800
40,000,000	National Tube Company, preferred	39,997,400
40,000,000	National Tube Company, common	39,936,300
40,000,000	Am. Steel & Wire Company, preferred	39,998,500
50,000,000	Am. Steel & Wire Company, common	49,899,800
18,325,000	Am. Tin Plate Company, preferred	18,325,000
28,000,000	Am. Tin Plate Company, common	27,985,000
24,500,000	Am. Sheet Steel Company, preferred	24,497,700
24,500,000	Am. Sheet Steel Company, common	24,488,800
31,373,800	Am. Bridge Company, preferred	31,363,900
30,950,800	Am. Bridge Company, common	30,949,700
29,888,400	L. S. Cons. Iron Mines	29,421,494
160,000,000	Bonds Carnegie Company	159,777,000
$680,281,600	Total	$679,381,394

In addition, the corporation must also deposit the stocks it owns of the Union Steel Company, Troy Steel Products Company, Shelby Steel Tube Company, Clairton Steel Company and any other companies it may acquire. It will also from time to time mortgage to the trustee all mining rights, leases or other real estate, subject to the prior lien indenture of April, 1901.

The Free Entry of Machinery for Repair Work.—The Board of United States General Appraisers handed down a decision on November 26 defining the scope of the paragraph of the tariff law which permits the free entry of machinery imported into the United States in bond for repair. The importer in this case was S. S. McCrea of Buffalo, and the facts as set forth by Judge Henderson M. Somerville, who wrote the decision, were as follows: "The testimony of the importer's witness shows that the goods were imported for the purpose of being attached to an electrical ladle crane now being built by the Morgan Engineering Company, Alliance, Ohio. When the whole is completed it is to be exported to Canada. No change was to be made in the imported goods, except that they were to be attached to the crane. In our judgment such an operation does not constitute repairs. It is rather the making of a new article. The importation of these parts for the construction of the crane is only part of the process of original manufacture, and not a process of repairs. Repairing is the mending or making over of something that has been previously constructed or manufactured." On this state of facts Judge Somerville overrules the importer's protest against the assessment of duty on the machinery.

The Lodge & Shipley New Projectile Lathe.

In the accompanying half-tones is shown a new lathe for turning projectiles, built by the Lodge & Shipley Machine Tool Company, Cincinnati, Ohio. The machine is driven by a 15 horse-power Ridgway motor, mounted on an extended sub-base at the head end of the lathe, a little to the rear, as shown in the illustrations. The motor has 20 speeds, ranging from 350 to 750 revolutions per minute. The controller for the motor is mounted on the rear, as may be seen in Fig. 2, and is operated from the carriage or the head stock by the vertical hand wheels seen in Fig. 1, which engage a splined bar connected to the controller at the head end by a chain. The back gearing in the head has a ratio of 1.62 to 1 and 2.62 to 1, and the speed ratio of the motor shaft to the live spindle is 7.48 to 1 and 15.1 to 1. All of the main driving gears in the head have cast iron centers and machinery steel rims of extra width. Extra heavy spindle bearings are used, the front one being 7⅞ inches in diameter by 8¾ inches long, and the back one 7½ inches in diameter by 5⅝ inches long. The spindle is of crucible steel, 0.55 carbon, and has a 2⅜-inch hole through its center.

At the slowest speed of the motor the lathe has a cutting speed for roughing the body of the shell of 30 feet per minute and for finishing of 60 feet per minute. As may be seen in the front view of the lathe, there is a spirally milled cylinder on the speed control shaft immediately under the apron. This provides an automatic, mechanical and full electric speed variation for varying diameters, so that the cutting speed may be continuous from 2 inches diameter up to the largest diameter of the projectile. The tool post is of steel, and the steady rest is of a special design, which may be quickly applied and removed. Another noteworthy feature is the radial attachment seen in Fig. 2, by which the tool carriage is moved perpendicularly to the work to give any one of several curves to the projectile nose. The chuck was made by the lathe builder and is of a massive and substantial design, particularly adapting it to the work for which it is intended. Another feature of interest is found in the diameter gauges, which are mounted on the nose of the tail stock. These in practice afford considerable economy in time.

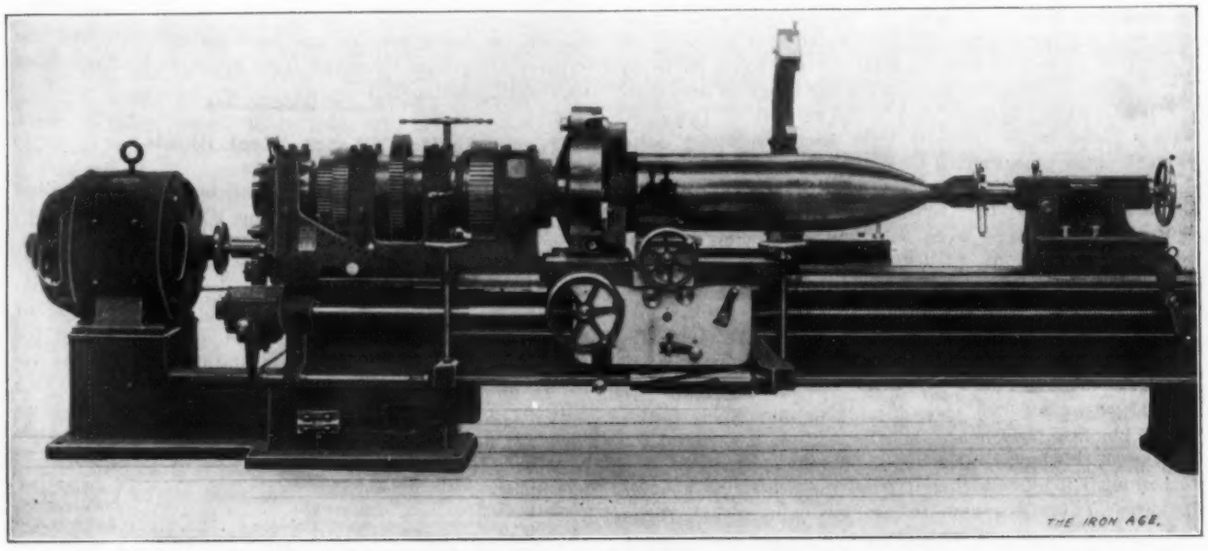

Fig. 1.—Front View of the Lodge & Shipley Lathe with a Projectile in Position.

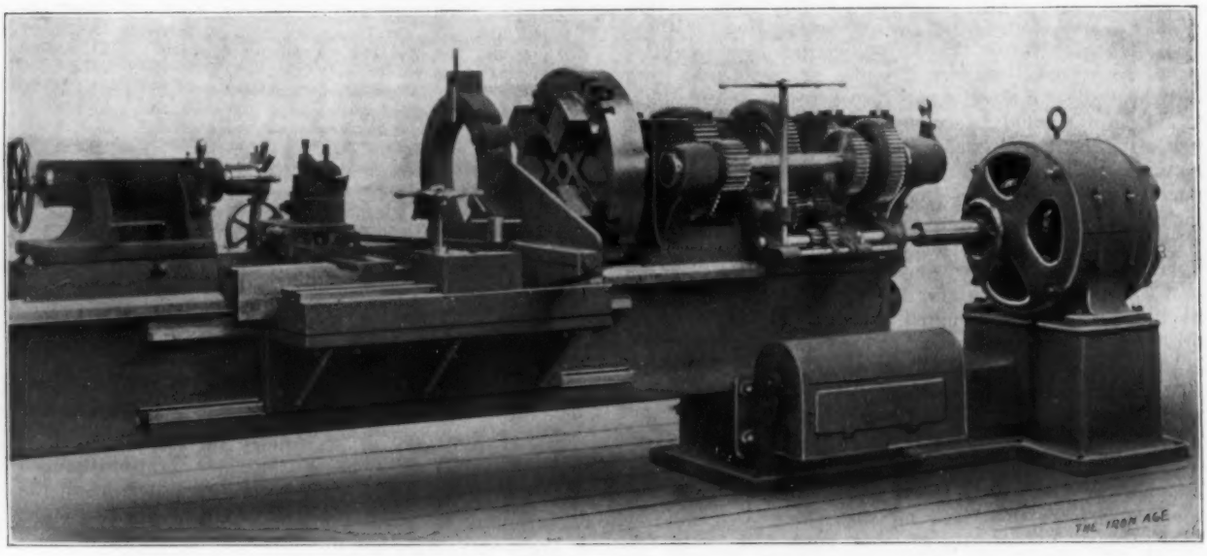

Fig. 2.—Rear View of the Head Stock and Carriage, Showing the Radial Turning Attachment and Drive Gearing.

The lathe has a 27-inch swing and, as illustrated, a 14-foot bed, but the length of bed may be varied to suit the requirements of the customer.

It is proposed to establish a trade school in connection with Trinity College, Hartford, Conn. At a recent meeting of the Hartford Board of Trade, President Luther of Trinity outlined the needs of a technical school at Hartford, and set forth plans for a trade school which would be a department of the college. The Board of Trade has indorsed President Luther's views and appointed a committee to help carry out the project.

The Minimum Wage Question in the British Coal Industry.

GLASGOW, November 19, 1904.—A dispute in the coal industry of Scotland has directed attention to the serious issues before that industry in the whole United Kingdom. The possibilities are so large as to make the subject of vital interest to America also. In both hemispheres the socialistic ideal of a "living wage" has innumerable worshipers, and in both hemispheres that ideal is bound to be the cause of social strife. In this country the matter will reach a crisis in the mining industry sooner than in any other, because the Miners' Federation of Great Britain has already nailed its banners to the principle of the "minimum wage" as the central plank of its platform, and over the question of the minimum wage Scotland has just been on the verge of an industrial war.

The principle is an import here from England. It was adopted by the Scotch miners when they joined their trade unions to the Miners' Federation of Great Britain. That federation now covers all the mining districts of Great Britain with the exception of Northumberland and Durham. Yet the conditions of mining in Scotland are quite different from those in England and Wales. Scotch coal is of a poorer grade than English, and the wages of Scotch miners have always been regulated on a lower scale. Nevertheless, the Scotch miners having joined the National Federation, the Scotch industry has now to be subjected to the inspection of English and Welsh union leaders.

A National Wages Board Projected.

The great aim of the late president of the Miners' Federation, Benjamin Pickard, M.P., was to get the entire mining labor of the country under one organization and to compel English, Welsh and Scotch coal owners to come also under one organization of employers. His design was to have one National Conciliation Board, to regulate wages and conditions of labor in every mining center in the country, so as to prevent local friction and also to control production. This design is impracticable in view of the diversity of seams, of workings, of mining peculiarities, of relation to markets and of local conditions, but it is nevertheless now cherished as the aim of the federation. In order to carry out this design the federation has for some time past tried to get the working agreements and conciliation boards in all the different districts made terminable at the same date, so as to have a trump card to play at the renewing of them. It very nearly succeeded in this, but last year the Welshmen took the bit between their teeth and made with their employers an agreement which runs to a later date than the Midlands agreement. This, however, has only delayed, not prevented, the grand move which is to be made for a National Wages Board, which will fix the wages and dictate to the employers at all the coal mines in the United Kingdom.

Mr. Pickard also particularly desired to establish a minimum scale of pay below which, in no circumstances, must any miner be paid. He succeeded, first, in effecting this in the Midlands, and then in establishing it as the policy of the federation. Consequently when Wales and Scotland joined the federation they also became committed to this principle. In all mining centers wages are now under the supervision of conciliation boards, composed of equal numbers of coal masters and miners. Some of these conciliation boards have mutually appointed permanent neutral chairmen, who are called in when the parties are equally divided on any point, and whose vote is equivalent to the verdict of an arbiter. In Scotland the Conciliation Board has no permanent umpire, but when an agreement cannot be effected on vote of the board it is customary to call in some prominent man wholly unconnected with the coal trade to decide between them. These conciliation boards, however, have not unlimited powers. They are appointed to regulate wages from time to time as occasion arises, but they are not permitted to go either above or below certain limits. These limits vary with the districts, and it may suffice to say here that in Scotland, after the local unions joined the Midlands Federation, the minimum rate was made 37½ per cent. and the maximum rate was made 100 per cent. over the basis rates which ruled in 1888. This made the minimum 5 shillings 6 pence per day and the maximum 8 shillings per day, below and above which the Conciliation Board had no authority to make any arrangements. These rates are not necessarily all that a miner can earn; they are based on tonnage and represent the earnings on an average output. In effect, 5 shillings 6 pence per day is the lowest daily sum a Scotch miner has to receive for his labor. By becoming parties to conciliation boards with these limitations the

Coal Owners Have Practically Accepted the Principle of the Minimum Wage.

And now they are beginning to perceive the dangers into which it may lead them. When the Scotch Conciliation Board was reconstructed in 1902 the wage agreement was made terminable by either party on giving three months' notice. In the course of the past summer the coal owners gave notice to terminate the wage agreement (though not the board), and this was instantly accepted by the men as a declaration of intention to abolish the minimum wage, as for some time past the rate has been down to the minimum, 5 shillings 6 pence. As a matter of fact, the Scotch coal masters did not then propose to reduce wages below 5 shillings 6 pence per day, but they desired to be in a position to do so should the trade get any worse than it was, and certainly the prospects were dark enough. The miners at once applied to the federation and demanded assistance to fight for the maintenance of the minimum wage. The federation called a special conference to consider the matter, and the conclusion reached was that as the Scotch coal owners had not yet proclaimed any reduction below the minimum, although the wage agreement had terminated, no action was called for either by the local miners or the federation. But it was also resolved that should the minimum in Scotland be attacked the whole area of the federation would be moved to the support of those affected. According to a resolution passed at the last annual congress of the federation an order can be made to close any or all of the pits in the country in support of any local dispute affecting the interests of the whole federation. Thus the Scotch miners have the moral support of 600,000 miners at their back and the assurance that these will sustain them to the death if they have to fight. There is not going to be any fight just at the moment, because trade has improved sufficiently well to enable the coal masters to go on meanwhile at the minimum rate of wage, while they discuss with the miners' leaders the possibilities of a new wages agreement.

But it is plain to all experienced men in the trade, and to all thoughtful men outside of it, that this question of a minimum wage is rapidly leading us either to the greatest and most momentous labor war we have known or else to a permanent paralysis of our mining industry. As a principle it is economically false and industrially foolish. After the minimum wage was first established in England some years ago there came a spell of bad times, when several of the collieries could not make a profit, could not even pay expenses, on the basis of that wage. They could not get away from it because of their subjection to the Conciliation Board, and they had simply to shut down. It is all very well to say that no man should be asked or allowed to work for a wage that will not keep himself and his dependents on the lowest level of comfort, although it is impossible to find a common denominator in estimating the potentiality of a living wage. It is contrary to reason to say that a man should prefer starvation for himself and his dependents to payment below a regulation wage. But as the miners cling to the ideal as something precious which they have won only after much suffering, they will not yield it without a struggle, especially as the doctrine of the minimum wage is now being preached in other industries. And this is what makes the situation so grave.

The quantity of steel produced for every 100 tons of pig iron consumed for all purposes has been computed to be approximately: In Great Britain, 63 tons; in Germany, 75 tons; in the United States, 80 tons.

The Jeanesville Iron Works Company.

The recently completed plant of the Jeanesville Iron Works Company at Hazleton, Pa., affords one of the best examples in this country of a thoroughly modern manufacturing plant, carefully engineered and arranged with a view to obtaining low shop cost and at the same time the greatest perfection in the product. In 1852 James C. Haydon commenced the manufacture of mine pumps at Jeanesville, Pa. From a humble beginning the business expanded year by year as the merit of the pumps became more widely known, and, as is usual in such cases, the plant was enlarged at intervals to accommodate the growing business. The result was a series of structures of dissimilar architecture with numerous dark nooks and corners—in short, a combination of buildings such as many old established manufacturing industries are conducted in.

The managers of the plant had long felt the need of newer and larger quarters, but, engrossed as they were in developing their pumps and in establishing a market for them in all the mining districts of the world, rebuilding had long been deferred. Some two years since they finally determined to erect a new plant at Hazleton, Pa., a site which offered particular advantages for the manufacture of the product to which the company still devotes its exclusive attention—mine pumps. Dodge & Day, the modernizing engineers of Philadelphia, were commissioned to engineer the equipment. Ballanger & Perot, architects, co-operated with them in the construction of the buildings. Within a year from the signing of the contracts the new plant was in full operation. Reinforced concrete was the principal material of construction.

The thoroughness with which those intrusted with the laying out of the plant did their work is well shown in Fig. 1, the plan of the works. As may be seen, the raw material is received at the plant on a railroad siding. It is dumped from the cars into receiving bins and is carried to the foundry over an industrial railway. It is then raised to the cupola platform by an electric elevator. The sequence of operations from that point to the loading of the finished product on cars which run directly into the machine shop is never interrupted.

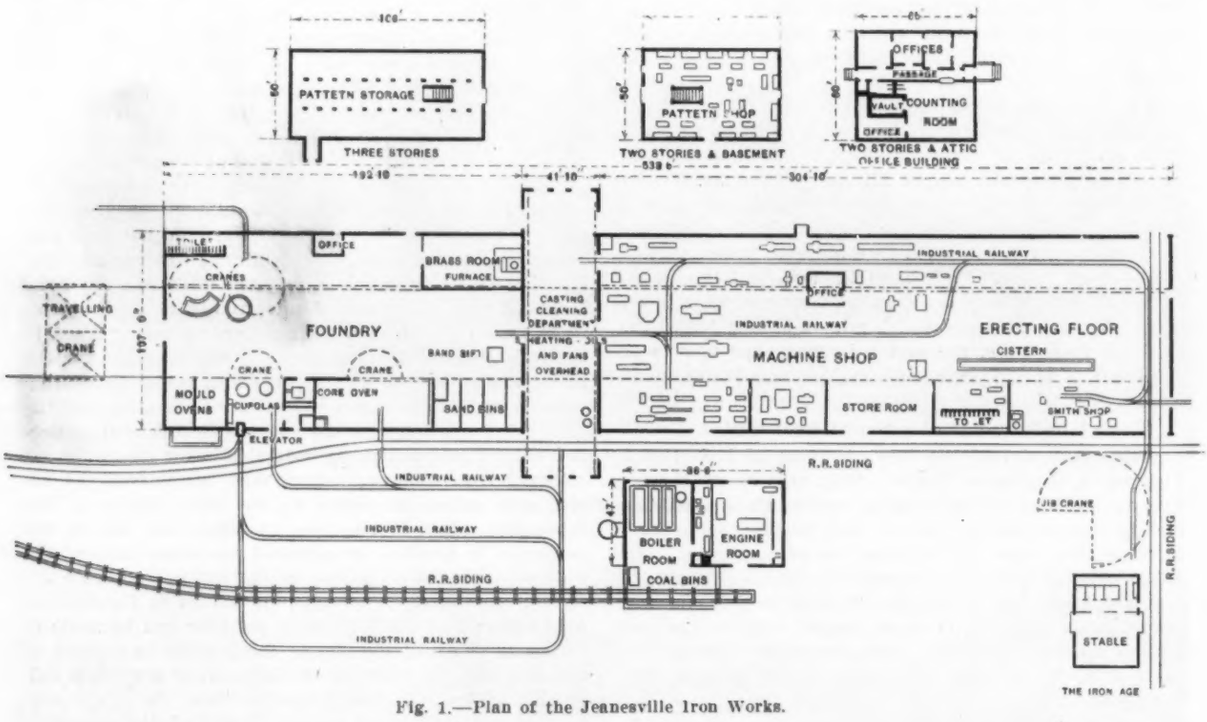

Fig. 1.—Plan of the Jeanesville Iron Works.

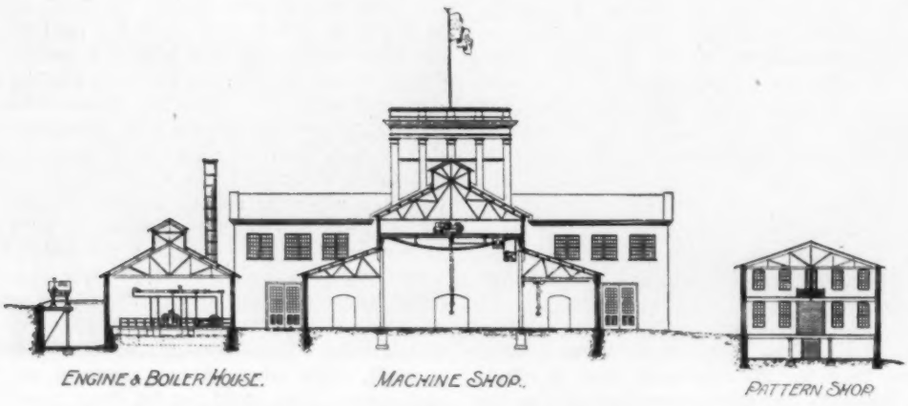

Fig. 2.—Cross Section, Jeanesville Iron Works.

The new plant consists of six buildings. The main building comprises the foundry, 107 x 192 feet; the casting cleaning department, 41 x 160 feet, and the machine and erecting shop, 107 x 304 feet. In the latter are located a room for small stores and a blacksmith shop. The other five buildings are the pattern shop, the pattern storage house, the offices, the power house and a stable.

Fig. 2 is a cross section showing the machine shop, engine and boiler house, the pattern shop, coal trestle and, in the background, a side view of the casting cleaning department, with the fire walls extending above the roof forming a tower in which are located the water tanks and the heating apparatus.

The casting cleaning department, which bisects the main building, is separated from the foundry and machine shop by two fire walls extending above the roof.

The eastern end of the main building is of temporary construction to permit of longitudinal extension. As the flask storage is at the western end of the plant, directly beyond the foundry, this end of the latter building is also not of permanent construction; thus, not only permitting of future extension, but also allowing the 20-ton electric crane to pass in and out with its load, as indicated in Fig. 3. This end of the foundry building is provided with large rolling steel shutters.

Due consideration was given by the architects to the location of the various buildings from the standpoint of the fire risk and also that one building might not interfere with the natural lighting of another. The entire side of the pattern storage building facing the foundry is a solid wall without windows.

The ground occupied by the plant required considerable grading, but the rock which was excavated was highly suitable for crushing to use in the concrete from which the buildings were constructed.

Fig. 3.—The Flask Storage Yard and End of Foundry.

Turning now to the details of the establishment, the operation of the entire plant is primarily dependent upon the power equipment. The engineers chose as the motive power for the plant direct current electricity. With the exception of several pneumatic ground operated traveling cranes in the casting cleaning department, all of the machinery in the shops is driven electrically.

A 300 horse-power De Laval steam turbine, connected to two 100-kw. Crocker-Wheeler generators, furnishes power for the entire plant at the present time. In the near future another unit of the same size is to be installed. Multiple voltage for obtaining the desired speed regulation throughout the shops is obtained by the introduction of a type D Crocker-Wheeler balancer set, consisting of three units, 40, 80 and 120 volts, each of these voltages being controlled by three field regulators. The compactness of the outfit and the small floor space required for the electrical power machinery are apparent from the illustration of the power house, Fig. 4. The adoption of a turbine without a condenser was governed by several important factors, not the least of which is the low cost of the steam generated, due to the fact that coal in this locality is obtained at about 90 cents per ton.

In the engineering room there is also a 12 x 18 x 12 x 12-inch Ingersoll-Sergeant class H air compressor, supplying air to the traveling cranes in the casting cleaning department, jib cranes in the foundry, and the various pneumatic tools. Between the engine and the boiler rooms are located the artesian well pump, the boiler feed pump, the vacuum pump, the feed water heater and a 1000-gallon underwriters' fire pump, which receives its supply from a 200,000-gallon reservoir. The means of fighting fire consists of fire plugs and hose lines located about the premises.

The clinkers from the boilers are thrown on a grating over an elevator boot located in the boiler house and are broken to the proper size, dropped through the openings and into buckets of a steel incased elevator, made by the Link-Belt Engineering Company, whence they are carried to a cylindrical receiving bin of 5-ton capacity. They are dumped into trucks through a gate in the bottom of the bin and carted away.

Fig. 5 is a general view of the interior of the foundry. On the left, immediately in the foreground, is a cylinder pit 12 feet in diameter and 9 feet deep. The plunger pit, which forms a third of a circle, 28 feet outside diameter and 20 feet inside, 4 feet wide by 6 feet deep, adjoins the cylinder pit. The weight pit is 13 feet 4 inches wide and 5 feet deep. These pits are served by individual jib cranes operated pneumatically. In the right hand bay are located a cupola, four core ovens, the blower room, molding department for small castings and sand bins and sifters.

The cupola is of 12 to 14 tons melting capacity per hour. Another similar unit is now being installed. The charging platform is served by a 2-ton electrically driven elevator provided with automatic stops at the top and bottom of the lift. There are two worm ladles of 8000 and 10,000 pounds capacity, respectively, with numerous smaller ladles. Every provision has been made for rapid economic handling of the material and ladles throughout the foundry.

Fig. 4.—General View of Power House, Showing De Laval Turbine.

Fig. 6 shows the casting cleaning department, which is served by two 10-ton floor operated pneumatic traveling cranes running its full length.

Fig. 7 gives an excellent idea of the interior arrangement and lay out of the machine shop, the absence of shafting, belts and other overhead obstructions being in marked contrast to the old-time shop. A generous area of glass in the windows and roof affords a uniform distribution of natural light. The floors are entirely unobstructed by anything that will interfere with the free use of the valuable floor space. A typical example of

the method of driving the larger machine tools by an individual motor is the boring mill shown in Fig. 8.

At the north end of the shop is erecting space, where also each pump is tested to far above its rated capacity before being shipped from the plant on the railroad cars, which come directly into this part of the shop, as can be seen from Fig. 1.

Throughout the plant the same care has been given in the selection and installation of the minor apparatus as in the case of the largest machinery, and the entire plant may well be considered a striking example of what

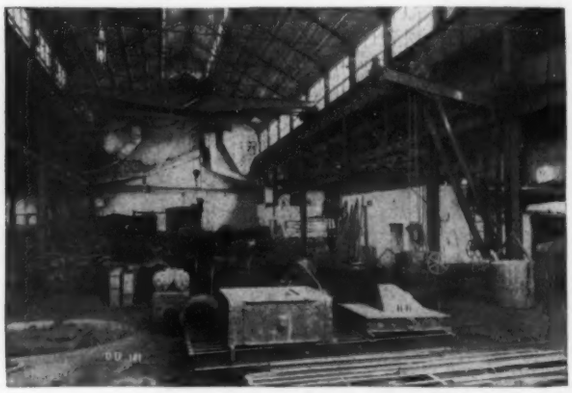

Fig. 5.—General View of Foundry.

progressive policy combined with intelligent shop engineering can produce.

James C. Haydon still remains president of the company. Vernon H. Rood is vice-president and general manager, while R. O. Jones is chief engineer.

A Labor Union Intervenes in a Customs Case.—The Pattern Makers' Union has intervened by counsel in

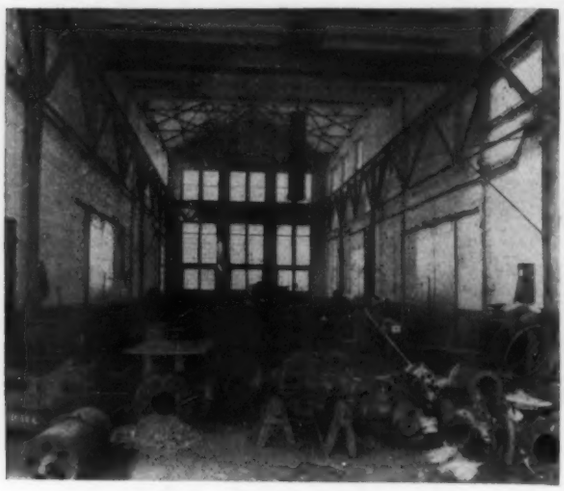

Fig. 6.—General View of Casting Cleaning Department.

the dispute between the Government and R. Hoe & Co. as to the proper duty to be levied on iron molders' patterns imported from England. It has retained one of the leading New York customs lawyers to assist the Government in defeating the effort of Hoe & Co. to secure the admission free of duty of the patterns, under the clause providing for models of inventions and patterns of machinery. The controversy is the outcome of a strike in Hoe & Co.'s pattern making shop about a year ago. At that time it is alleged by the union there were about 40 pattern makers employed there. After the strike Hoe & Co. began to send their drawings to their English plant to have their patterns made there, and for a time they were imported free of duty under the clause mentioned above. The union protested to the customs authorities, who took the view that the clause of the law in question did not apply to the commercial importation of patterns, but only to patterns of new inventions or models of new machinery. The importations of Hoe & Co. were then assessed at 35 per cent. as manufactures of wood and it is against this classification that the firm is protesting. The Board of United States General Appraisers had closed the taking of testimony on the protest, but last week the union's attorney appeared before it and secured permission to reopen the case and submit testimony to show that the patterns in question were entirely different in their nature from those intended by Congress to be covered

Fig. 7.—General View of Machine Shop.

by the clause in the free list. This is said to be the first time in the history of customs litigation that a labor union has been represented directly in proceedings to fix the rate of duty on imported products.

At Pittsburgh George E. Guyer, receiver of the Eleanor Iron & Steel Company, whose plant is at Irwin,

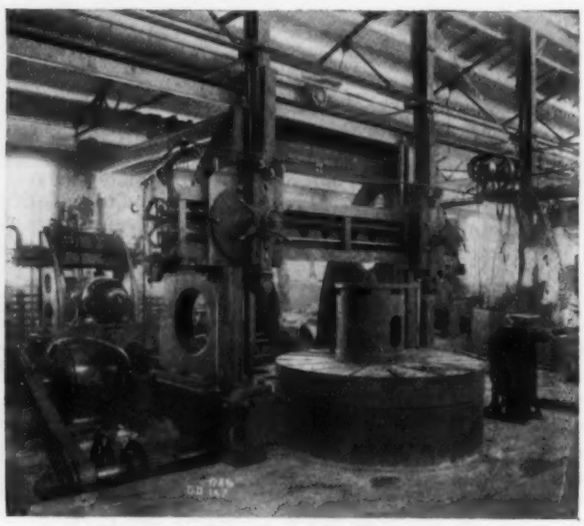

Fig. 8.—Boring Mill Equipped with Individual Motor Drive.

Pa., has entered suit against John Robinsteen, president, and George Robinsteen, manager, charging John Robinsteen with embezzling $40,000 and George Robinsteen $6000 of the funds of the company.

The interesting report comes from Waterbury, Conn., that interests closely identified with the brass industry of the Naugatuck Valley propose to ask the Connecticut Legislature for incorporation as the Naugatuck Valley Water Company, to develop the water power of the river by the erection of a large dam. The names connected with the corporation are Charles F. Brooker and Franklin Farrèl, Ansonia; John H. Whittemore and George A. Lewis, Naugatuck, and David S. Plume, Edward L. Frisbie, Jr., and Edward O. Goss, Waterbury. All of these gentlemen are prominent in the brass business of the valley.

The Jeffrey Swing Hammer Pulverizer.

The manufacture of swing hammer pulverizers has recently been taken up by the Jeffrey Mfg. Company, Columbus, Ohio, under the Schoellhorn-Allbrecht patent rights. It is designed for crushing and pulverizing material, such as coal, clay, shale, rock, &c., and is claimed to be the simplest machine of its kind made. Noteworthy features are the simple beater hammer, the V-shape bar screening surface, the simple adjustment of the beater arms to accommodate wear, the substantial adjustable dust proof

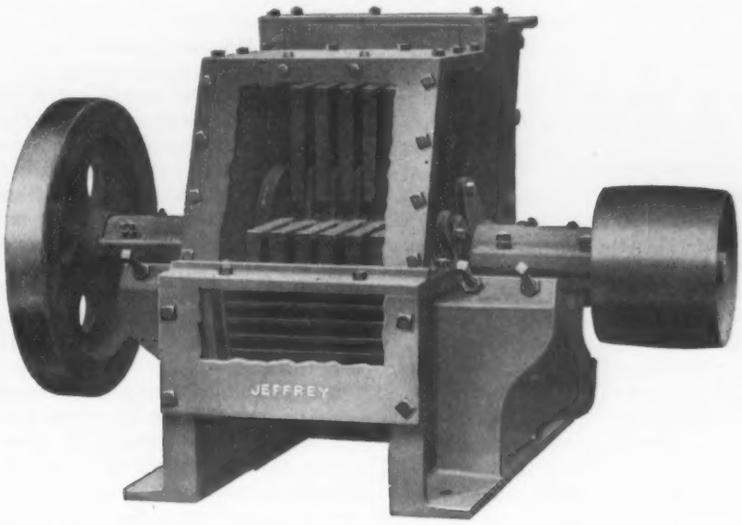

Fig. 1.—The Jeffrey Hammer Pulverizer with Parts Broken Away to Show Interior.

pillow blocks, and the top feed hopper, giving it a large capacity and permitting material to be partly crushed while in suspension.

Fig. 1 shows the pulverizer with its interior, or crushing, parts, and Fig. 2 parts of the sectional screen frame, which is one of the special features in this machine. The accessibility of its inner parts is another of its prominent features. By taking off the rear plate and the hand hole plates on the side of the machine it is possible to change the beater arms as well as the screening surface when necessary. The screening surface is made up in sections, so that it is the work of but a few moments to take out or change from one size mesh to another.

Many of these machines are now in use, so that it may be said to have passed its experimental stage. It is made in many sizes to suit various requirements. For coal the capacity varies from 50 to 100 tons per hour, depending entirely upon the degree of fineness to which it must be crushed. In pulverizing material such as rock, its capacity is from 10 to 25 tons per hour. The Jeffrey Company makes crushing tests for parties interested free of charge to demonstrate what the machine is capable of doing with their particular class of work.

Electrification in the Cascades.

Both the Northern Pacific and the Great Northern Railroad companies are seriously considering the problem of using the water power in the Cascades to haul their trains over the mountains. The coal consumption is so enormous in the mountains that the railways would be glad to adopt electric traction if the electrical engineers could prove the economy of it. An expert from one of the largest electric manufacturing companies has recently spent several weeks on the coast investigating the possibilities of electric traction on the Northern Pacific in Washington. The Great Northern's motive power department has also given a great deal of attention to the problem.

The Northern Pacific owns coal fields on both sides of the mountains. It has mines on the western side of the Cascade in the Carbon River district about 35 miles southeast of Tacoma. Its principal mine is at Roslyn, on the eastern side of the mountains, a few miles from the Stampede tunnel. This mine is producing 1200 tons a day. The coal costs the company about $1.35 a ton. The Great Northern is not so fortunate in its coal supply in the mountains. It buys a great deal of coal from the Northern Pacific. The development of its mines at Crow's Nest Pass, British Columbia, on the Canadian Pacific, will make it more independent in its coal supply. It now has a branch running north from Rexford, Mont., to its mines. The greater part of the coal for the Great Northern is brought through the lakes from Ohio. It also brings about 250,000 tons of coal a year from Illinois mines. This coal costs considerably more than that brought through the lakes, but it furnishes northbound tonnage for the Burlington.

Along both the Northern Pacific and the Great Northern in the Cascade country there are a great many water powers which could be utilized in generating electricity.

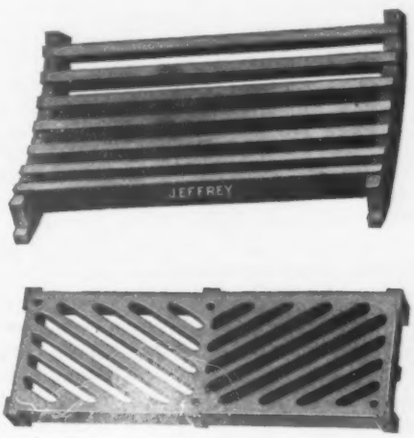

Fig. 2.—Parts of the Sectional Screen Frame of the Pulverizer

On the Northern Pacific there are 15 or 20 points from which it could get electric power. Coming out of the Stampede tunnel at its eastern end the attention of travelers is called to a cascade that drops down the face of the mountain from a great hight. There is sufficient water power at this point to install an electric power plant. The question of installing electric plants in the Northern Pacific's coal fields is also under consideration.

A square foot of uncovered pipe filled with steam at 100 pounds pressure per square inch will radiate and dissipate in a year the heat stored in 3700 pounds of such steam by the economical combustion of 400 pounds of coal. Thus every 5 square feet of bare pipe will correspond to a waste of a ton of coal per wear.

Profit in the Use of High Speed Steel Tools.

"How much will it save?" This is the first and frequently the only question considered in connection with the proposition to change to the use of alloy steel for tools. So somebody is set to figuring, and perhaps experimenting, to determine how much the piece work prices can be cut by a change in the tools—sometimes with disappointing results. The statements as to wonderful results accomplished in tests do not seem to be borne out in the actual work of the shop, under the normal conditions of work; and if the direct savings turn out to be small, the proposition is likely to be passed up. As a matter of fact, the astonishing results we hear of are secured under exceptional conditions, and are not very likely to be duplicated under ordinary conditions. Then, too, the chances are that in any shop there will be a good many jobs that are as profitably done with the cheapest carbon steel as with the high priced alloys for reasons inherent in the jobs themselves. Take, for instance, a piece which requires considerable time in preparing and setting, so that the cutting time is only a small fraction of the whole time. In such cases a rapid cutting tool may not save much directly; but even here it may economize considerably indirectly, in time saved in grinding and in setting the tool, to say nothing of the larger proportion of work that is saved from the scrap pile. Again, it may be found that fewer machines will be required to do the work. In a case that came under my observation a workman had been using two lathes on his job. His piece work price was 55 cents per hundred. High speed tools were made for one lathe, and the machine properly speeded up. The workman under these conditions made 50 cents a day more than before, while the piece work price was cut to 30 cents a hundred, and the second lathe was made available for other work. Even if there had been no saving in the piece work price, there would have been the indirect saving of interest on capital invested in the lathe and in wear and tear. The important saving will, of course, be that effected through a reduction in the piece work price. And just here lies also the chief difficulty in the way of introducing the high speed tools into the shop.

The piece worker is notoriously sensitive to changes in his rate; and it is a problem to keep the rates adjusted in such a way as to get economical production and at the same time keep a reasonably satisfied and loyal body of workmen. Without the latter there can be no such thing as long continued profitable production, no matter how cheaply work may be turned out for the time being. Strikes, shutdowns, idle machines, capital making no turnover, and dissatisfied workers holding back the whole machinery of production instead of pushing it ahead with enthusiasm and loyalty: all these must be reckoned as a part of the cost of production in the long run. All this points to the importance of the human factor in the equipment and running of the shop, a factor all too frequently treated with little regard to sound principles of mechanics. I use this expression advisedly, for in this paper not altruism, but mechanical production is under consideration. And of this the human operator is an essential element, and must therefore be seriously regarded, at least as much as the inanimate machine that he operates—that is, the operator must have just treatment.

Now, as already suggested, the problem is to adjust the new rates with justice and profit—the only combination that is likely to be satisfactory in the end. The increased speed of the tool means increased speed for the workman. He must necessarily work under a higher tension, and for this additional steam pressure under which he puts himself he wants and deserves additional compensation. A fundamental principle in the readjustment, then, is a permanent increase in the total earnings of the operative. A greedy neglect of this is sure to bring its own punishment. It is the custom in many establishments to grant an increase in wages in case of increased output by the workman, and after a time to restore the daily earnings to the old maximum. This is not only unjust, but always leaves "sore spots," which will ultimately affect the total cost of production unfavorably—often in a wholly intangible but none the less certain way.

The amount of increase in wages to be allowed will naturally depend upon the nature of the job and the savings effected by the speeding up of machine and man, and must be figured out for every individual job. A method I have found practical is here given, illustrated by a concrete example taken from the test sheet record. The test taken is No. 61.

TOOL STEEL TEST.

New Piece Work Prices and Savings Effected.

NUMBER OF PART FINISHED	WORKMAN'S NUMBER	DEPARTMENT NUMBER	OPERATION	MATERIAL FINISHED	CONDITION OF MATERIAL FINISHED	NUMBER OF TEST	KIND OF TOOL STEEL USED	NUMBER OF PIECES FINISHED WITH ONE GRINDING OF THE TOOL	SPEED IN FEET PER MINUTE	FEED IN INCHES PER MINUTE	BASE PRICE OF STEEL PER POUND	COST OF STEEL USED PER 100 PIECES	OLD PRICE OF OPERATION PER 100 PIECES	NEW PRICE OF OPERATION PER 100 PIECES	WAGES THIS MAN AVERAGES PER DAY	YEARLY PRODUCTION	SAVING PER 100 PIECES	NET SAVING PER YEAR'S PRODUCTION	NUMBER OF DAYS THIS MACHINE IS ACCESSIBLE FOR OTHER WORK	REMARKS
V-735	4210	30	TURNING	STEEL	HARD	49	SELF-HARDENING	5	44	4¼	35¢	$.03	$2.12½		$1.91	4,093				1-MAN OPERATES 2-LTHS
"	"	"	"	"	"	"	7-HIGH SPEED STEEL	25	70	6¾	65¢	.008		$1.50	$2.62	"	$.44½+	$18.11	18½	1- " " 2- "
B-104	4721	"	"	"	"	50	SELF-HARDENING	17	63	6¾	35¢	.007	$3.30		$2.77	38,371				1- " " 2- "
"	"	"	"	"	"	"	7-HIGH SPEED STEEL	30	90	8½	65¢	.0026		$3.22	$2.88	"	.30+	$16.17	57	1- " " 2- "
L-288	2360	19	"	"	MILD	61	SELF-HARDENING	40	60	3.67	35¢	.003	.75		2.42	19,025				1- " " 2- "
"	"	"	"	"	"	"	7-HIGH SPEED STEEL	100	106	6.89	65¢	.002		.57	2.76	"	.134	$34.45	19½	1- " " 2- "
L-226	2705	"	"	"	"	62	SELF-HARDENING	60	60	4¾	35¢	.002	.40		2.47	"				1- " " 2- "
"	"	"	"	"	"	"	7-HIGH SPEED STEEL	200	106	8½	65¢	.001		.30	2.53	"	.10+	$19.22	11½	1- " " 2- "
"	"	"	"	"	"	"	7-HIGH SPEED STEEL	193	96	7⅞	60¢	.001		.32	2.56	"	.03+	$15.42	10	1- " " 2- "

Profit in the Use of High Speed Steel Tools.

The average daily wages for this job at the old rate of 75 cents per hundred pieces is $2.42, which latter divided by the former gives 323 pieces as a day's output. The ten-hour day equals 600 minutes, which divided by 323 gives 1.855 minutes, the time used per piece produced. But as the man operates two machines, the actual time required per piece is twice this number, or 3.71 minutes. This is the whole time allowed per piece, including setting and handling, grinding and setting tools, and idle time during which the machines are not actually running. The length turned is 8.5 inches, and the feed is such that 3.67 inches of stock are finished per minute. Dividing the first by the second the actual cutting time per piece comes out 2.32 minutes. From another record it is found that on this job a tool will finish 40 pieces per grinding, and that the average time required for grinding and setting the tool is five minutes. Dividing 5 by 40 we have 0.125, the fraction of a minute per piece finished which is chargeable to grinding and setting. Add this to 2.32, the time required in the actual cutting, and we have 2.445, the number of minutes required for necessary machine work on each piece. Subtract this from 3.71 and there remains 1.265, the number

of minutes per piece used for handling, setting and for idle time.

Returning now to the test sheet, it is found that a practicable feed with the high speed tool under trial is 6.49 inches of stock per minute. This divided into 8.5, the length in inches of the part to be machined, gives 1.155, the number of minutes required for cutting. By reference to the record of grindings, it is found that the tool finishes an average of 100 pieces per grinding, and that five minutes is required per grinding and setting. By division again, the time to be allowed per piece for grinding and setting of tools is found to be 0.05 minute. Adding this to 1.155, the actual cutting time, and to 1.265, the time allowed with the old tool for handling, setting and idle time, we have 2.47 minutes, the time required to finish one piece.

Dividing 600, the number of minutes making a working day, by 2.47, the time required per piece, gives 242, the number of pieces finished on each machine; but as the man is operating two machines, his output is twice this number, or 484 pieces per day. Dividing this number into $2.42, his former daily wages, we find that with no increase in the workman's daily earnings the piece work price for this operation performed with a high speed tool could be 50 cents per hundred pieces. At this point the man himself should come into the calculation. In this particular case it is found on conferring with the workman that he will be very well satisfied with an increase of 30 cents per day for the increased exertion. A simple calculation shows that this would mean a rate of something less than 57 cents per hundred. Leaning always toward the liberal side in these cases, the rate is agreed to be 57 cents per hundred, which nets the man an increase of 34 cents per day, raising his average daily wages from $2.42 to $2.76.

The saving to the employer in this case involved, on a basis of 19,025 pieces per year, amounts to $34.25 on wages, and about 20 cents on tool steel. Besides this, two lathes are available for other use for 19½ days each, a factor that is also capable of being expressed in terms of dollars and cents, though in this example it was not particularly considered. It will be observed, however, that the saving in machinery used is in excess of one-third—that is, with high speed tools on this job, only two-thirds as many machines are required for the work, or what amounts to the same thing, the same number of machines is used only two-thirds as long. There is, therefore, a saving of one-third in capital invested in equipment, with a corresponding saving in the depreciation account. There is rarely a saving in the amount of power required. On the contrary, the cost of power is usually slightly higher, because the amount of power required increases a little faster in proportion than does the speed. Just what the excess is can be ascertained from friction and speed tables. It rarely amounts to enough to be a factor in the calculations.

A careful examination of the foregoing will show that a large part of the saving in this particular job was the result of the decreased number of grindings. The job selected was an average one, and while there are likely to be many where this factor is less important, there are, on the contrary, many where the matter of grinding is the most important thing—and occasionally it is the only factor that need be considered. For instance, I had a job of shaft turning in which the material came so hard that the tool would turn only one piece per grinding, and did a poor job at that. A rapid cutting tool was substituted, and was found to turn 25 pieces at a grinding, with perfect ease and precision. In such cases, which are of course uncommon, who would stop to figure out the actual saving before permanently adopting the high speed tool?

In the example above, which was taken because it was a typical one, it is noticed that there is a small saving on the cost of the tools, because the tools require fewer grindings and last longer. In every test shown on the sheet, a portion of which is shown herewith, there was an actual saving in the total cost of tools. In some cases I have found that the expense for tools is slightly greater than where the cheaper steel is used; but always in cases where the cutting time is a small part of the whole time required. On the other hand, there are frequent cases where not only is the total cost for high speed tools less, but the first cost per tool is actually less. Lathe tools are left out of consideration here, because in both cases they may be assumed to be made without forging except for special purposes, and therefore simply cut from the bar, ground and set in a tool holder. The cost of the tool is, therefore, a very small matter in either case. In the case of large reamers and milling cutters, however, where inserted teeth can be satisfactorily used, I have frequently produced a tool that actually cost less by nearly a third than a similar tool made wholly of carbon steel. Such instances are perhaps exceptional. But there certainly are many cases where such a tool could be so designed that the cutters might be replaced when used up, and the cost for renewal of the tool would be only that of new cutters. The cost of the holder being divided among the many sets of cutters, the first cost per tool will even then compare favorably with that of the carbon steel tool, and may be made cheaper, not only relatively to the finished product, but in actual first cost. W. B.

Canadian Power for Western New York.

An announcement of considerable importance as concerning the future application of a portion of the power to be developed on the Canadian side at Niagara Falls is to the effect that the Ontario Power Company has entered into a definite contract with the Niagara, Lockport & Ontario Power Company whereby the former is to deliver to the latter 30,000 electrical horse-power by July 1, 1905, and an additional 30,000 horse-power by January 1, 1907, making 60,000 horse-power in all. The contract is made for a period extending to April 1, 1950, but may be renewed 60 years longer, or until 2010. Under the agreement this power is to be delivered by the Ontario Power Company at the boundary line in the vicinity of the whirlpool, where the Niagara gorge is narrow, and at which point a transmission line is likely to be erected. The indications are that the Niagara, Lockport & Ontario Power Company will build a transformer station at or near the whirlpool, and under the agreement it is to build a transmission line extending as far east as Rochester by July 1, 1905. The performance of this contract is guaranteed by the forfeiture of a specific sum as liquidated damages in case of nonperformance.

It is intimated that this contract is made with the Ontario Power Company by the Lockport Company for the reason that it would require a long time to develop power in the vicinity of Lockport, and thus indications are that the long reported prospective development at or near Lockport is very remote, for this contract is for 50 years, with privilege of renewal for 60 years more. The Ontario Power Company is erecting a power station at the water's edge in the gorge on the Canadian side of the river, and has already installed its first steel flume, which has a diameter of 18 feet. The company's plan is to place three of these flumes, each of which is intended to supply water enough for developing 60,000 horse-power.

Unofficial reports are being circulated that the United States Steel Corporation, through its subsidiary companies, the Carnegie Steel Company and the American Sheet & Tin Plate Company, will grant a voluntary advance in wages on January 1. We can state that up to this time this matter has not been officially considered. As far as the American Sheet & Tin Plate Company is concerned, it has wage scales with its employees which do not expire until July 1 of next year.

Orders have been issued by the American Sheet & Tin Plate Company to start up its Humbert Works at South Connellsville, Pa. The plant contains six hot and six cold mills and has an annual capacity of 13,500 gross tons of black plate, and also turns out tin and terne plate. This plant has been idle since last May.

Number Stamping on Metal Parts.

There is hardly any requirement in the numbering of metal parts which is not now successfully met by small automatic machines, specially designed to meet every necessity. The old method of stamping directly with individual letter punches and a hammer has passed into disuse in all establishments where there is much of this work to be done, on account of the labor and time involved and the unevenness and unsatisfactory appearance of the work. Automatic machines are provided

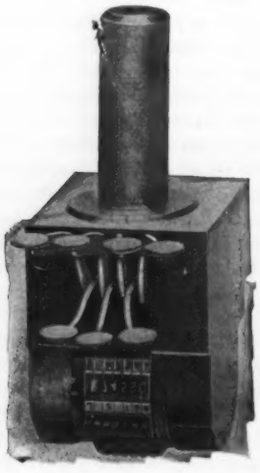

Fig. 1.—The Bates Numbering Machine.

with straight or tapered shanks of any size desired and may be used in regular punch presses of suitable capacity. In *The Iron Age* of November 5, 1903, was described a numbering machine made by the Bates Machine Company, 346 Broadway, New York, and 2 Cooper street, Manchester, England, a cut of which is reproduced in Fig. 1 herewith. These machines are set up, adjusted and operated in much the same manner as an ordinary punch. That their practicability has been demonstrated may be seen from the other illustrations, Figs. 2 and 3, representing pieces and parts actually numbered with them. The engravings were taken directly from the objects themselves, the letters being whitened to make sufficient contrast for photographing, but no retouching was resorted to.

Flat surfaces are numbered with straight alignment of figures, or the alignment may be curved to correspond to almost any radius, and thus improve the appearance of the numbering, or by economizing space increase the size and legibility of the figures. Letters or characters of any kind are provided for and any combination of them with figures may be instantly set in stamping position. Any size, style or shape of figure may be used, and any metal which can be machined is capable of being numbered by this process. The pieces A, B, D and G are of brass, while C, E, F and H are hard rolled steel stock. In B it will be observed that not only is the alignment curved, but the position of each figure radiates from a common center, while in F the alignment is shown curving in the opposite position with the figures parallel to each other. D, with the number in the form of a letter V, shows one of the more difficult propositions, and was made for a well-known watch case manufacturer, a design being placed above the figures and partly extending into the top of the V, thus producing a trade-mark easily recognized.

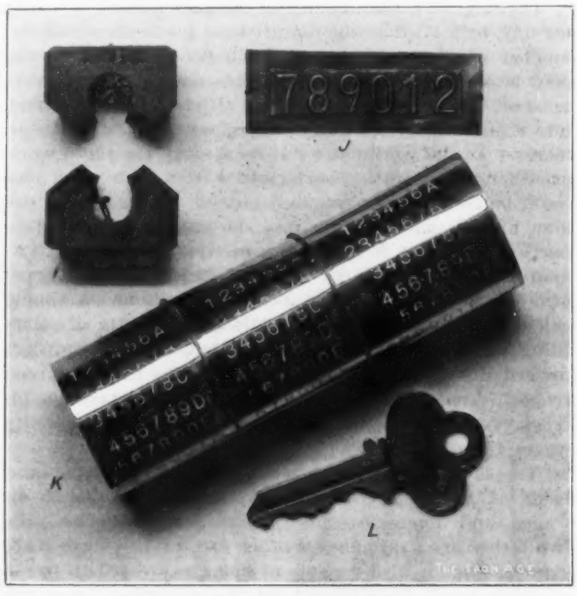

Fig. 3.—Examples of Special Stamping.

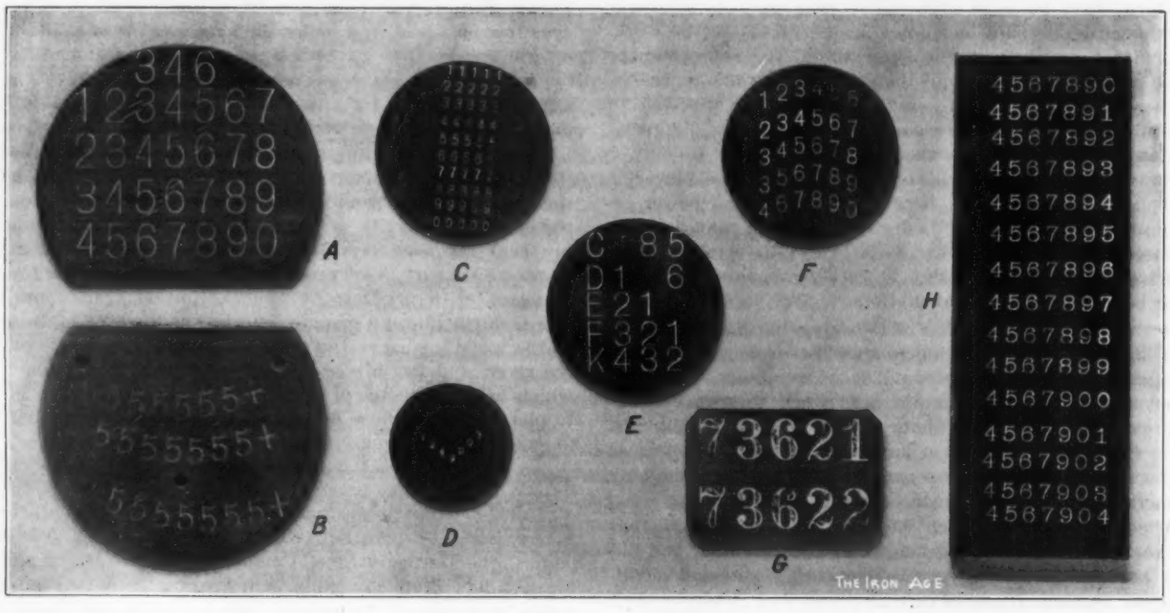

Fig. 2.—Examples of Flat Stamping; A, B, D and G Are of Brass and C, E, F and H of Steel.

This system of numbering, however, is not confined to flat surfaces, as it is practicable to number round, convex, concave and other surfaces presenting different radii. K is a piece of shafting 1½ inches in diameter, and to number it the faces of the figures were made concave. J illustrates an embossed number. The material is thin, soft brass (0.006), and the machine was designed

for numbering gas meter tags. The entire number, with the panel, was embossed at one stroke of the press, and the number automatically advanced. I is a set of standard adjustable dies. The match number is placed upon the back of each half of the die before the parts are finished and separated, thus assuring correct assembling. Machines with double numbering movements, for numbering both parts at one operation, are used by some manufacturers. It will be observed that the illustrations show a high degree of excellence in the matter of the alignment and spacing of the figures, while the depth to which they are sunk is always unform. The numbering is absolutely accurate, and in many instances the saving of time is so great that the entire equipment pays for itself in a few weeks or months, according to the extent to which it is used. Usually it becomes boy's work, and after the job is once set up an average of 1000 pieces per hour can be numbered, or even greater rapidity attained as the feeder becomes expert.

Lake Iron Ore Matters.

The Volume of Shipments.

DULUTH, MINN., November 26, 1904.—The fall weather has been excellent for ore shipment, and business has been continued at full speed at nearly all docks until now. The Great Northern road is ceasing shipments, and at Marquette and Ashland there is a let up, while the Duluth and Two Harbors docks will be more quiet another week. A number of barges are to be laid up the coming week, among them many of those belonging to the United States Steel Corporation. It may be doubted if November shipments reach 4,000,000 tons, which has been set up as a mark by many of the lower lake authorities, but some ore will go along to docks during early December. The talk of an ore famine during the coming winter is unwarranted, whatever may be the melting rate between now and the opening of navigation, and it may be stated upon the best authority that there has not been any serious consideration of the idea of taking ore to Eastern furnaces by all rail on account of a possible shortage. There was such an enormous stock at the opening of navigation, an accumulation never before exceeded, that it, combined with the receipts of the summer, is sufficiently large to tide over the winter and leave a comfortable tonnage on hand next spring at the opening of navigation. Of course, all furnaces may not have their full supply of ore and some grades of raw material may not be on hand in the quantity desired. There always is a certain amount of all rail shipment from the nearest ranges to Chicago, and this may be larger than usual, partly on account of the inclusion of receipts from the Baraboo district, and the tonnage of ore that goes in winter from every range to furnaces in the Northwest is constantly increasing, and will be very much larger the coming season that ever before. This is on account of the operation of new furnaces at Duluth and Sault Ste. Marie. It looks as though the Cleveland Cliffs Iron Company had abandoned the plan of removing its Gladstone furnace to Munising, for it is being repaired and improved for a renewed campaign.

Hoover & Mason Take a Stripping Contract.

The Interstate Mining Company of the Jones & Laughlin Steel Company will move off several million cubic yards of earth and other overburden from its Grant mine, Mesaba range, beginning the coming winter. The contract has been let to Hoover & Mason, Chicago. This is the first time this firm has come into the Mesaba region and it will probably make changes in methods of work there that will be interesting, to say the least. They will probably be of advantage to mining companies also. The time honored steam shovel has been the sole machine for moving overburden from mines of this range, except for one ill timed, ill planned and poorly carried out attempt in the early days of the range. Hoover & Mason bring to this work the experience of engineers of great skill in handling material, and their experiments will be watched with much interest. As was said in this correspondence some weeks ago, in reference to the probability of contracts for work at Grant mine, there are possibilities of labor saving in devices used on the Mesaba for earth removal that are inviting to engineers, and it is pleasant to note that a trial is to be made along this line. The work at Grant will be done with the aid of the clamshell, so well known in ore unloading of late years. The buckets will be suspended on cables from towers, and sections of the overburden will be lifted away, the ore below mined out and subsequent sections of overburden dumped in the pit thus formed.

Some Heavy Shippers.

Stevenson mine of the firm of Corrigan, McKinney & Co., Mesaba range, whose shipments have been expected to amount to a very large total, turned the 1,600,000-ton point last Wednesday and is still shipping. It may run up to about 100,000 tons more. This is its largest year. The cause for this increase has been referred to briefly as coming in part from a desire on the part of the United States Steel Corporation to receive its allotment of Stevenson ore, coming to it from a contract between the owners of the mine and the Clairton Steel Company, as early as possible, and to this end asking for double the annual output. Stevenson has frequently mined this year more than 16,000 tons daily, and has made a remarkable record, under the efficient and skillful direction of Amos Shepard.

Burt mine of the Oliver Iron Mining Company, located within a few miles of the Stevenson, has also made a wonderful season. This is its second year, and development in the way of stripping has been going on constantly, but the mine has so far shipped better than 1,250,000 tons and is still working away. This year's output is about four times that of the preceding year. The mine is in excellent shape now for an enormous and low cost production, and is to be still further stripped for the coming year. It is possible that work will be maintained all winter.

Leonard mine, a new producer, has shipped about 140,000 tons so far and will increase this slightly before the close of the year. It is operated by a group of employees of the Great Northern Road. E. F. Bradt, who has been manager of this operation since its inception, has resigned and goes to Detroit, Mich., where he is interested.

Chapin mine, at Iron Mountain, closed the shipping season Saturday with an output for the year of about 545,000 tons. This is less than for some time and compares with 704,000 last year and with 957,000 the season preceding, which was its biggest. Considerable ore is left in stock. Chapin has mined about one-fourth of all ore taken off the Menominee range.

Corrigan, McKinney & Co.'s mines at Crystal Falls have been closing this week. They have made an output for the year of above 500,000 tons. Of this amount more than half came from old stocks, and has about cleaned them off. This old ore was crushed before shipment.

Notes of Interest.

At Iron Mountain the Chapin and Aragon mining companies, both branches of the United States Steel Corporation, remembered their employees on Thanksgiving Day by the present of a turkey to all married men and heads of families in their employ. It took more than 1000 birds for the two companies. At no other mine center on Lake Superior is this custom in vogue.

Improvements of an important character are to be carried out at Menominee range mines this winter. At the Antoine group, operated by the Republic Iron & Steel Company, there will be new machinery equipment and buildings, and it is the intention that a much larger product be mined the coming year than before. The company may also work its Vulcan property, where there is a very large tonnage of lean siliceous ores. Dunn mine of Corrigan, McKinney & Co. is to be unwatered and will doubtless become a large development the coming year. There are workings in this mine from which more than 1,000,000 tons of ore have been taken, and these are all full of water. The unwatering of Great Western proceeds with rapidity and will be completed in a few weeks.

The mine will be worked to its fullest capacity thenceforward, which means the employment of several hundred men and the production of about 2,000,000 tons of ore annually. The mine has a large amount in reserve. Monro mine, belonging to Rogers, Brown & Co., is to be stripped and made into a milling proposition. Toward this end a large amount of work will be carried forward the coming season. A number of raises will be driven under the stripped area. This mine is producing an ore running 40 in iron and very low in phosphorus, and is valuable for its silica and physical characteristics.

Old Mansfield mine is once more in trouble, and the shaft has been stripped by a cave from the third level to the bottom. Pumping was stopped by breaks in the line, and the mine is full of water. It is not yet known what is to be done with the property, but a pumping plant will probably be installed in the new shaft and the mine reopened therefrom.

On all lake ranges there is a demand for labor that is surprising, considering the quietude of the summer. Men are not to be had at old rates of pay, and on the Mesaba, where the going rate was $1.60 during the summer, $2 is freely offered without bringing out any large force. The rate of pay in the lumber woods is now $4 a month higher than a year ago, and men are scarce for this work, too. Finns and other north of Europe laborers, who often go across the water in the fall for a winter at their old homes, are staying here this season. In the case of the Finns it is probably partly due to the fear of conscription into Russian armies if they are found in Finland, but in the case of other nationalities it is on account of the added pay and the assurance of an active winter.

W. A. Barrows, Jr., general manager of the Shenango Furnace Company, Sharpsville, Pa., calls my attention to a remark in my correspondence of November 17 in reference to the difficulty of sinking shafts at the Shenango mine, Mesaba range, and thinks that casual reading may possibly reflect unfairly on the mining department of the company. Certainly no such reflection was intended. The Shenango was a most difficult proposition, and if any criticism can be attached to the methods of early operation there, they are not directed either at Mr. Barrows or Mr. Fitch, two of the most capable men in the West. Shenango is now mining about 900 tons a day, all the furnace company desires, and is in shape to produce steadily for a long time to come. This matter is mentioned of my own volition and without the knowledge of Mr. Barrows or Mr. Fitch, and is intended to avoid any possibility of misunderstanding. D. E. W.

A 30-ton base plate was recently hauled from the Reliance Works of the Allis-Chalmers Company, Milwaukee, Wis., to the new Commerce street power house of the Milwaukee Electric Railway & Light Company, which is now in course of construction. This plate is the first of eight of similar size which will form a part of the four 3000 horse-power vertical cross compound electrical units which are to be added to the outfit of the railway company. The base plate just delivered is for the low pressure cylinder side of one of these engines. Another plate of the same size to go under the high pressure side of the engine is necessary to complete the base of the first of these new engines. The Allis-Chalmers Company is erecting these new engines, aggregating 12,000 horse-power, and is delivering them while the building is in course of erection. When the inclosure is complete the lighter and more delicate parts will be added. It is expected that the entire station will be ready for use during the coming spring.

H. J. Dickerson, Niagara Falls, N. Y., has been granted letters patent on an all metal vat designed for use in paper and pulp mills. The present customary installation in these plants consists of vats of wood, which rot out quickly under the wet conditions always about them. Once installed the all metal vat will last as long as the mill, while it will effect large savings in the matter of renewal and the insertion of broken parts. The solidity established through the use of the all metal vat does away with all vibration of the plates, and this gives greater efficiency. Then it is claimed that with the use of Dickerson's screwless plates in connection with a vat 12 feet long by 40 inches wide 2268 additional inches in the length of slots are gained, hence greater capacity.

Pig Lead Drawback Regulations.—The Treasury Department, in a circular issued November 26, has amended the drawback regulations on articles manufactured from pig lead as follows:

Paragraph 2 is stricken out and the following is substituted therefor:

Paragraph 3 of the Department's instructions, dated July 19, 1898, providing in effect an allowance of 2½ per cent. for wastage to compensate for loss incurred in manufacturing articles from pig lead to the exported forms, is hereby amended to allow the addition of 1 per cent. of the net weight of the exported articles to such net weight as a compensation for loss incident to manufacture.

Paragraph 3 is amended to read as follows:

It will be understood, however, that when pig lead appearing in the exported articles has been produced from imported lead bullion allowances for loss or waste due to the smelting and refining processes or to the refining process only, will be made as prescribed in T. D. 21,251, dated July 12, 1899, the second paragraph of which is hereby amended to read as follows: "Add to the net weight of the exported articles, after official verification, one-ninth of such weight when the pig lead used in the manufacture of such exported articles was imported in the form of ore, and 2 per cent. of such weight when the material used in the manufacture of such exported articles was imported in the form of lead bullion."

Bauxite Brick.—A patent has just been issued to Walter F. B. Berger, Little Rock, Ark., for making refractory brick out of bauxite, the ore from which aluminum is extracted. The value of bauxite as a refractory material has been known for several years, but its lack of cohesive qualities has heretofore prevented its being molded into brick. This difficulty has been overcome by Mr. Berger's process, thus giving to the steel trade a practicable and cheap brick for basic furnace lining to replace the expensive magnesite brick now so extensively used. The patent covers the use of a binder with calcined bauxite. The new process uses a natural bauxite from Arkansas which is particularly low in silica, bonded by a small percentage of plastic fire clay. The amount of silica in the finished brick is considerably less than 10 per cent., and is not appreciably detrimental to its elasticity. The brick contains from 88 to 90 per cent. of alumina and from 10 to 12 per cent. ferric oxide, titanic acid and silica. This brick is especially adapted for linings of basic open hearth furnaces. The highest grade bauxite brick are used in the floor and walls up to the slag line, protected by a bed of calcined bauxite. Above the slag line cheaper brick, with a lower percentage of bauxite, may be used. The price at which this brick will be sold is considerably lower than that of magnesite brick and there are one-third more bricks to the ton. They have been given severe tests in several of the principal steel plants of the country which have proved very successful. The brick is now on the market, being manufactured in St. Louis by the American Bauxite Company.

A New Spelter Plant.—The New Jersey Zinc Company, which owns a number of spelter and zinc oxide works, has decided to erect a large new plant at Depue, Ill., in the same district in which the works of Matthiessen & Hegeler and the Illinois Zinc Company are located. To begin with, a plant capable of treating 75 tons of ore per day will be erected.

A new electric furnace method has been invented in France in which the electro-negative metal is fused and used as the cathode, with a non-attackable substance as anode, and an electrolyte of a fusable, only slightly volatile, halogen compound of the more electro-positive metal. When a current is passed through, the ionization effected produces a combination of the metals, with consequent liberation of the halogen. Other metals can be used under suitable precautions.

The Whiting Roller Driven Tumbling Barrel.

Herewith is illustrated a tumbling barrel which is peculiarly adapted for use with exhaust systems for removing the dust and at the same time may be easily transported from place to place in the shop. This barrel is made by the Whiting Foundry Equipment Company, Harvey, Ill., and, as will be seen in Fig. 1, consists of two heads and a number of staves. These staves may either be cast iron or wood steel lined, or the body of the barrel may be made of plate steel. In the type illustrated the staves are cast iron and held in position by a bolt at either end. There is no door or opening into the barrel, except that which may be made by removing two or more staves, according to the requirements.

The barrel itself is not attached to its driving mechanism and may be lifted off with a crane and carried from one part of the foundry to another. It rests on four flanged wheels or rollers, two of which are drivers and the other two idlers. The drivers may be actuated either individually or in single row batteries by means of a belt from a shaft or electric motor, or a motor may be direct connected to each tumbler shaft. To stop the mill it is only necessary to depress the lever shown in the illustration. This actuates a pair of cams which lift the barrel from the driving wheels, the load being sustained by the two cams and by the two idlers. The momentum of the barrel assists in lifting its weight, so that one man can easily lift the barrel by means of the lever. The construction of the tumbler and the principle of its manipulation are well shown in Fig. 2.

Special provision is made for making the bearings dust proof. Flanges are provided at the hubs of the roller wheels and on the set collars to correspond with recesses in the bearing caps, into which they fit, excluding dirt from the bearings. The barrel heads or rims are made of chilled charcoal iron, as are also the drive wheels. The whole device is made exceptionally strong and has many advantages in point of durability.

A large number of these barrels have been in use in the malleable iron foundry of the McCormick Division of the International Harvester Company of Chicago for about a year, the Whiting Company having refrained from placing them on the market generally until they had had extended usage at this installation. In actual practice at the McCormick Works the tumblers are lifted from their bearings as soon as the work is done, and are transferred by crane to the scene of the next operation, and are immediately replaced by newly loaded barrels. In this way, by loading and unloading at central points, the tumbling mills are never idle more than the few moments required to remove one barrel and replace another, and the laborious and expensive work of wheeling castings to and from the tumbling room and loading and unloading barrels in place is avoided.

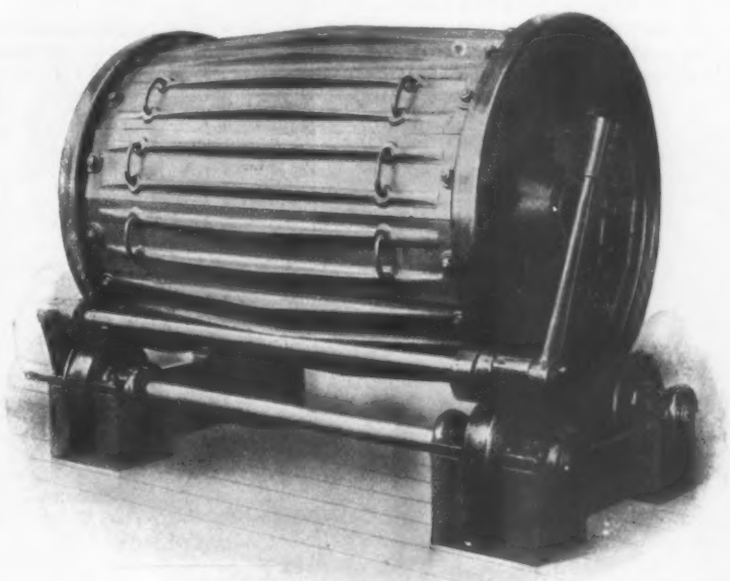

Fig. 1.—Roller Drive Tumbler with Cast Iron Staves.

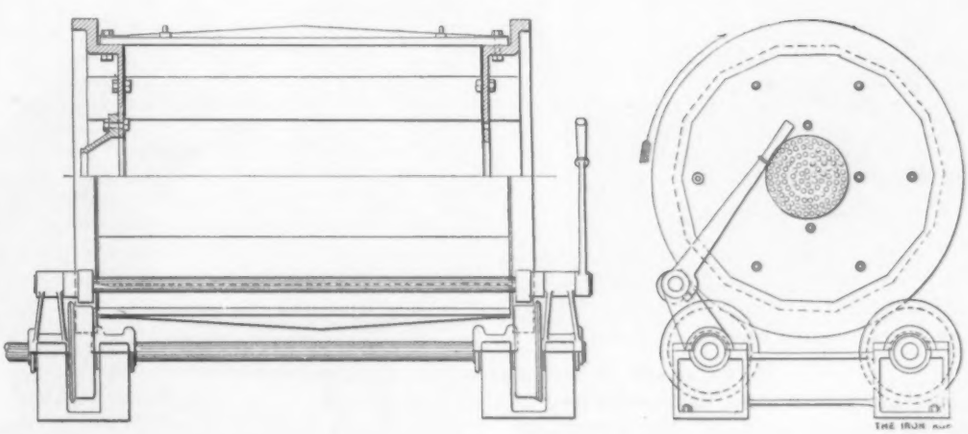

Fig. 2.—Side View, Partly in Section, and End View of Tumbler Shown in Fig. 1.

Victoria furnace at Goshen, Va., is to blow in soon.

The Sturtevant Portable Forges.

The adaptability of portable forges to all light forge work has made them invaluable to blacksmiths, wagon and carriage smiths, tool makers, locksmiths, tinsmiths, jewelers, prospectors and miners, bridge and tank builders, sheet iron workers and riveters in general. In shops and mills, on shipboard, in manual training schools and mechanicals laboratories of technical schools they meet alike the requirements of a small and medium sized forge for heating and tempering and for small repairs.

For many years the B. F. Sturtevant Company, Hyde Park, Mass., has been making forges of this class, and from time to time new sizes have been added to meet new applications and conditions, until now it manufactures some 31 standard sizes. Besides adding new sizes the designs of older sizes have also been perfected. The sheet

Fig. 1.—Sturtevant Portable Forge, Type A, Size 3.

metal work is of heavy steel plate, the running gear is heavy, strong and easy of operation. The tuyeres are made extra strong to resist the action of the fire, and the fire pan is of a double metal plate, with asbestos between to prevent the heat from cracking the main pan or affecting the running gear. The blower is of the Sturtevant steel pressure type, has babbitted journal boxes, and has been redesigned to give increased capacity.

There are seven distinct types represented respectively by the A, B, C, D, E, F and G forges. Types A, B and C are alike except in the means of producing the blast. The blast for the type A forges is provided by an attached blower driven by hand power. The B forges are arranged for pipe connection and receive blast from an independent blower, which may supply a number of forges. Forges of the C type are fitted with a blower driven by a pulley on the forge, belt connected to a line shaft or other drive.

The A forge shown in Fig. 1 is built in five sizes adaptable to all light work and is extensively used by

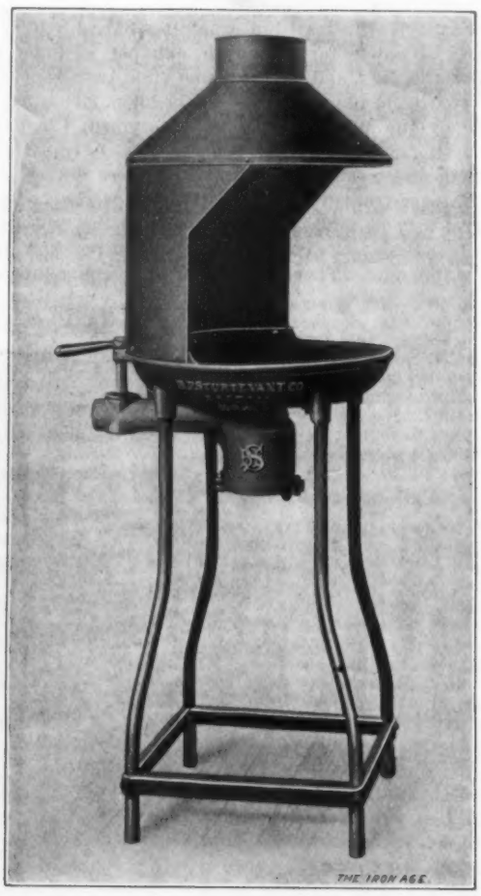

Fig. 2.—Type B, Size 2.

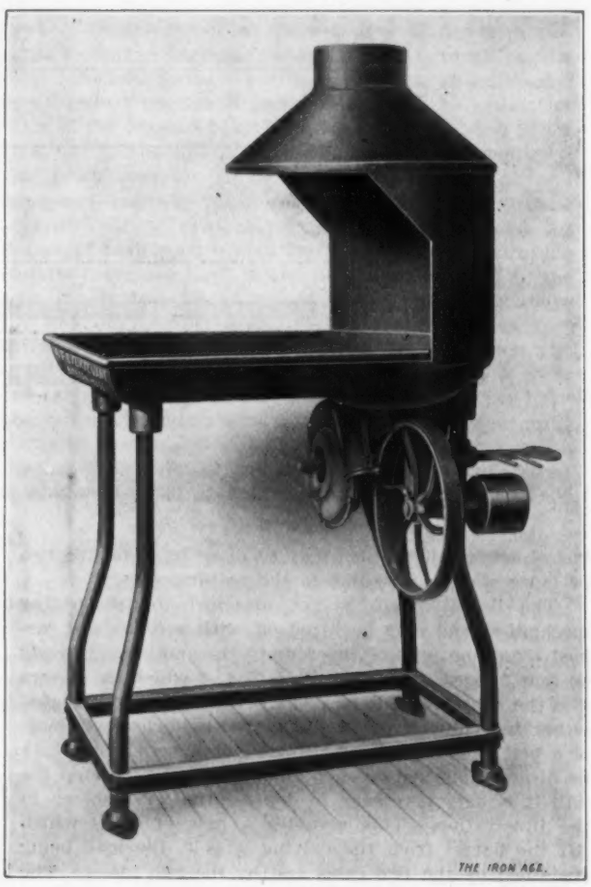

Fig. 3.—Type C, Size 5.

wagon and carriage smiths, tool makers and blacksmiths, or wherever small repairs are necessary. Sizes A 1, A 2 and A 3 differ only in the hoods. The A 1 is provided with a wind guard, A 2 has an open hood and A 3 a closed hood. Sizes A 4, A 5, A 6 and A 7 have larger pans and are provided with a water tank. A 8 is heavier in construction, has a Sturtevant hand blower attached for supplying the blast, and is used largely for stationary work.

The B type forge shown in Fig. 2 is made in eight sizes particularly adaptable to mechanical laboratories of technical schools. As before stated, they are similar to the corresponding numbers of the A forges except in the manner of producing the blast.

The C forges shown in Fig. 3 are made in four sizes, C 4, C 5, C 6 and C 7, corresponding to forges A 4, A 5, A 6 and A 7, and are fitted with a tight and loose pulley for belt connection; a continuous blast may thus be provided which can readily be regulated by means of a blast gate underneath the fire pan.

For the lightest forge work forges D 1, D 2, D 3, E 1, E 2 and E 3 are peculiarly suitable. Sizes D 1, D 2 and D 3 are like A 1, A 2 and A 3, but have shorter legs for bench work, and are arranged for blast connection to an independent blower. The pan tuyere and blower of the E 1, E 2 and E 3 forges, shown in Fig. 4, are exactly similar to but smaller than those on the A 1, A 2 and A 3 forges, but the hand power attachment is arranged for bench work. With these forges a strong wooden box is furnished sufficiently large to hold a complement of tools, together with the forge itself. This equipment is, therefore, much used by repair and set up men on account of its ease and convenience of transportation. As in the A forges, the three sizes differ only in the hoods. E 1, like A 1, is provided with a wind guard only; E 2 has an open front hood and E 3 a closed hood. For the light work of jewelers, locksmiths, tinsmiths and farmers and for all small repairs this type of forge is best adapted.

The F forge is made in three sizes, F 1, F 2 and F 3, exactly like the A 1, A 2 and A 3 forges except that they have much shorter legs; in fact, they are short enough to give the correct hight for operation when the forge sets on the box. This type meets the requirements of the prospector and miner, but is not as readily portable as style E.

The G forge, built in two types, with hand or stationary blast, is extensively used for stationary work on account of its durability. The body is of heavy steel plate rigidly braced and is provided with a wind guard. It is extensively used by bridge and tank builders, sheet iron workers and riveters in general.

In addition to the forges themselves the B. F. Sturtevant Company furnishes complete equipments, including power and hand blowers for producing the blast, exhaust fans for the removal of the smoke, blast and exhaust piping systems, hoods and blast gates.

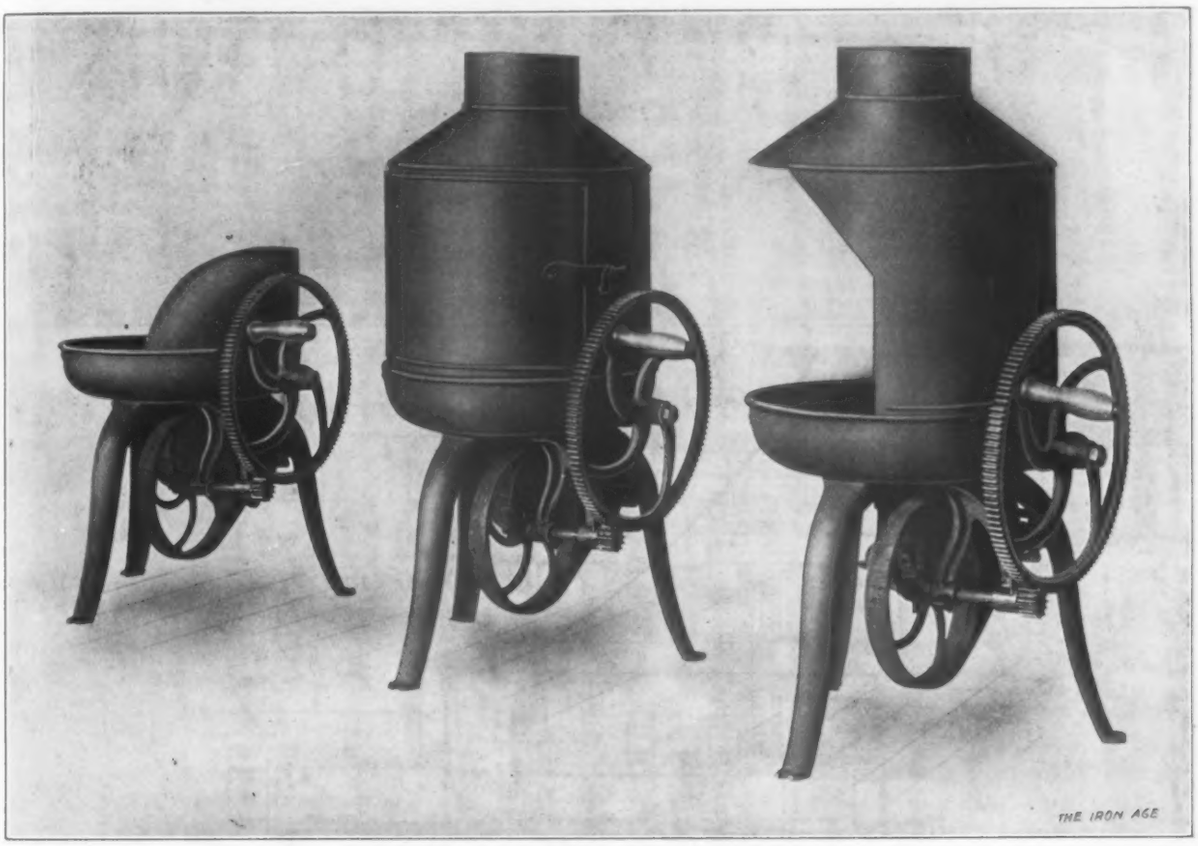

Fig. 4.—Sturtevant Portable Forges, Type E, Sizes 1, 2 and 3.

A remarkable case of building elevating has just been successfully accomplished in Brooklyn. Public School No. 85 is a four-story brick building, measuring 84 x 150 feet and containing 31 classrooms. Located on low ground, much difficulty was experienced by the occasional flooding of the basement. To meet the situation it was decided to raise the entire structure 34 inches and build a new foundation under it. This was done by means of 1200 jack screws, operated by 75 men, who marched around one after the other, each man giving each screw a quarter turn. The entire weight lifted was about 16,800,000 pounds, or 7500 gross tons.

The French Automobile Club has been conducting a series of experiments on the length of time required to stop an automobile at various speeds, and more particularly as to the distance in which a full stop could be effected. While it is found that the stopping is somewhat quicker than that of a horse, yet the distances traversed are considerable when the speed is at all high. Some of the results are: At 7½ miles per hour, 10 feet; 10 miles, 13½ feet; 12½ miles, 16¾ feet; 16 miles, 33 1-3 feet; 25 miles, 60 feet. The stopping distance seems to vary rather faster than the speed.

The New Prentice 18-Inch Lathe.

The 18-inch high speed engine lathe shown in the accompanying illustrations was designed by the Prentice Bros. Company, Worcester, Mass., especially for use with the new tool steels. Apart from its great power the machine is interesting mechanically in its arrangement for procuring eight spindle speeds from a single speed countershaft, thus always furnishing an equal belt power no matter what spindle speed is in use; and inch belt, which runs at a speed to transmit 15 horsepower.

The eight changes of speed are obtained by means of the levers A, B and C, shown in Fig. 3, and also on the front of the lathe head in Fig. 1. The arrangement is such that there is no danger of engaging conflicting spindle speeds at the same time. On the pulley shaft D, Fig. 2, which is situated at the back of the head and revolves at a constant speed, are two friction clutches, E and F, either of which may be operated by lever A,

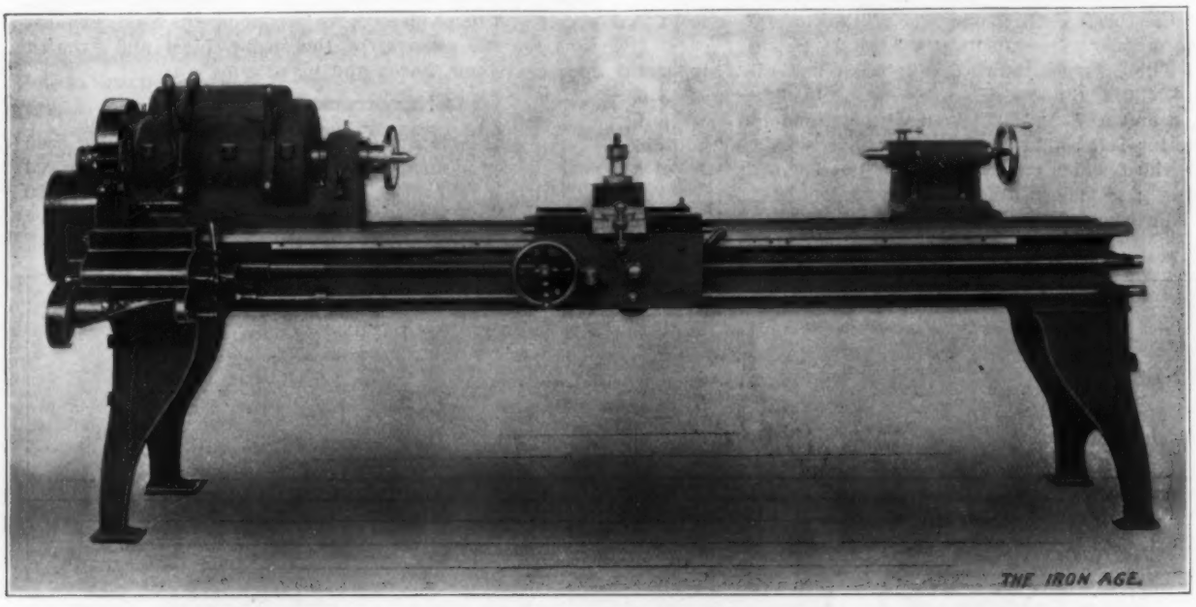

Fig. 1.—The Prentice New 18-Inch High Speed Lathe.

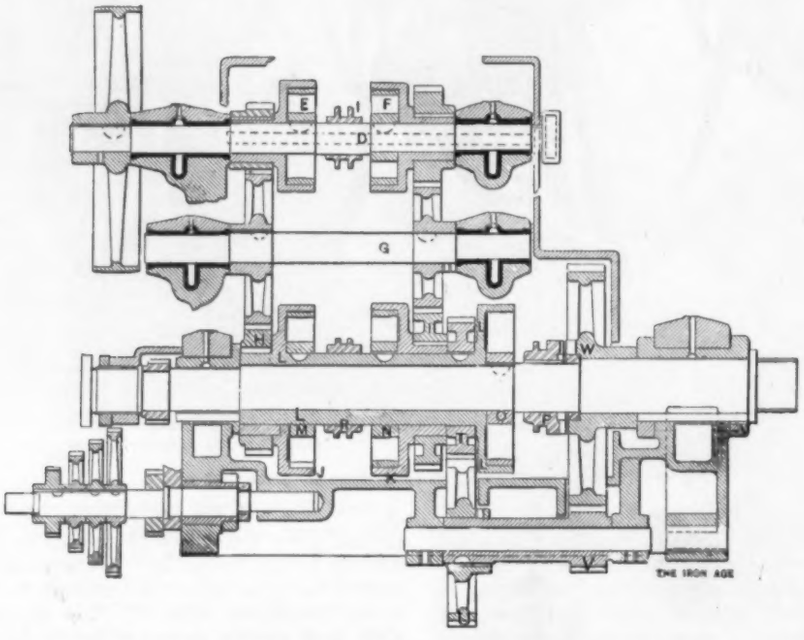

Fig. 2.—Detail of the Speed Changing Mechanism in the Head.

in a new modification of the quick change feed device. As will be seen by referring to Fig. 2, four changes of speed are obtained between the pulley shaft and spindle through an arrangement of gears and friction clutches, and the number of changes are doubled by engaging the back gears by means of a positive tooth clutch. The back gear never travels fast enough to make it impracticable to use a positive clutch for this purpose The result is a ratio of 6 to 1 between the spindle and any friction while the back gears are in use. The driving pulley which is located on a back shaft drives the spindle by means of gearing. The pulley carries a 4-

which slides the friction spool I. Between the spindle and the pulley shaft is located the shaft G, which carries two gears of different diameters meshing with corresponding gears on the pulley shaft, and also gears which are fastened to the hubs of the friction disks J and K. These friction disks run loosely upon the quill L L, which is itself mounted loosely upon the spindle, and which carries the friction disk L′ L′ at its end. The friction rings M and N are keyed to the quill L. The friction ring O is keyed to the lathe spindle. The four high speeds are engaged as follows: With frictions E, M and O, driving directly; with frictions F, N and O,

driving directly; with frictions F, M and O, driving through the intermediate shaft G; and with frictions E, N and O, also through the intermediate shaft. The back gears and the spindle driving gear W run constantly, while the friction spool I is engaged with either friction E or F. By engaging the friction spool and clutch P, which is keyed to the lathe spindle, with the spindle driving gear W the back gear speeds are obtained. If

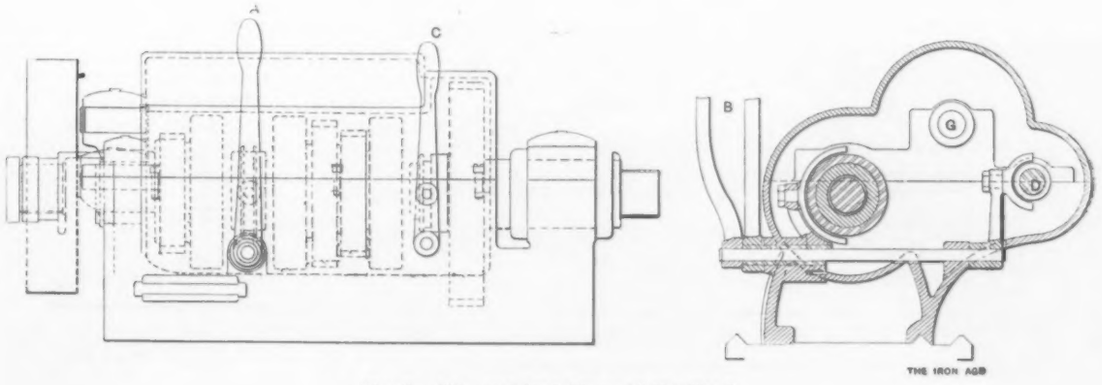

Fig. 3.—Side and End Views of the Head.

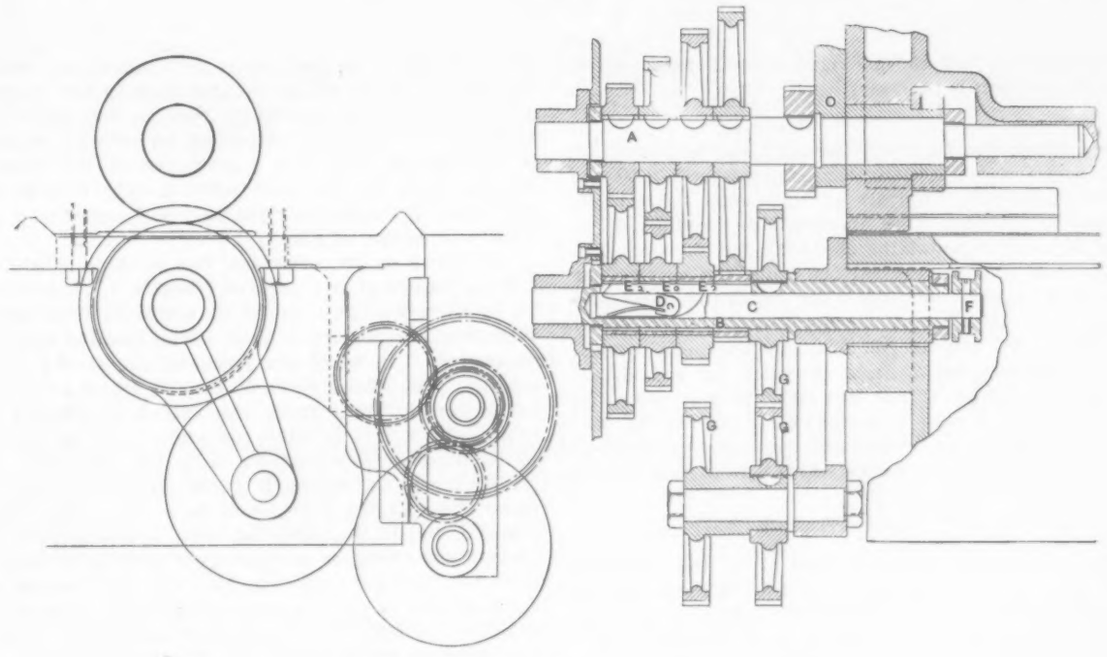

Fig. 4.—Detail of the Feed Changing Mechanism.

desired the lathe is furnished with a two-speed countershaft, to double the number of speeds to 16.

The device for changing the feed and the cutting of screw threads is a radical change from the swing intermediate type, as it does away with raising and lowering an intermediate gear sweep and sliding the intermediate gear laterally to engage with feed gears on the end of the head and bed. A pull spline and spring spline in combination replace the older mechanism. Upon the end of the head stock and in the position usually occupied by the regular feed spindle is a feed shaft, A, in Fig. 4, upon which four feed gears are splined. The shaft is supported at its outer end in a brass bushing mounted upon the gear guard. This shaft with its gears revolves at the same speed as the main head spindle of the lathe. Below the feed shaft is a hollow stud, B, on which are loosely mounted four gears meshing with the feed gears on A. The gears on both A and B run constantly with the main spindle when not disengaged by the usual rocker device on the end of the head stock at O. The two groups of gears are of the ratios 2 to 1, 1 to 1, 1 to 2 and 1 to 4, which in connection with the bank of gears mounted on the side of the head gives a range of thread cutting from 2 to 32 per inch. The feed cuts per inch are 5.7 times the number of threads cut.

The hollow stud B contains a pull rod, C, which has fastened to its end the spring spline D. The spring spline allows changes of feed and thread cutting to be made instantly while the lathe is in motion, by sliding the handle E, Fig. 5, on its guide rod, the handle projecting from the side of the head stock and connected with

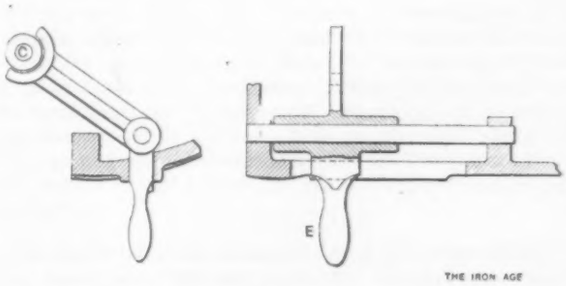

Fig. 5.—Detail of the Handle Controlling Mechanism in Fig. 4.

pull rod C at F, in Fig. 4. The hollow shaft B contains a slot running the full width of the four gears. When it is desired to change the rate of feed, the pull spline C being moved laterally causes the spring spline to be withdrawn from a slot in the bushing on the feed gear, throwing that gear out of use. When the spring spline passes the pin E it immediately engages the next gear. The form of the driving end of the spline makes this action against the pins possible.

The New Prentice 18-Inch Lathe.

The 18-inch high speed engine lathe shown in the accompanying illustrations was designed by the Prentice Bros. Company, Worcester, Mass., especially for use with the new tool steels. Apart from its great power the machine is interesting mechanically in its arrangement for procuring eight spindle speeds from a single speed countershaft, thus always furnishing an equal belt power no matter what spindle speed is in use; and inch belt, which runs at a speed to transmit 15 horsepower.

The eight changes of speed are obtained by means of the levers A, B and C, shown in Fig. 3, and also on the front of the lathe head in Fig. 1. The arrangement is such that there is no danger of engaging conflicting spindle speeds at the same time. On the pulley shaft D, Fig. 2, which is situated at the back of the head and revolves at a constant speed, are two friction clutches, E and F, either of which may be operated by lever A,

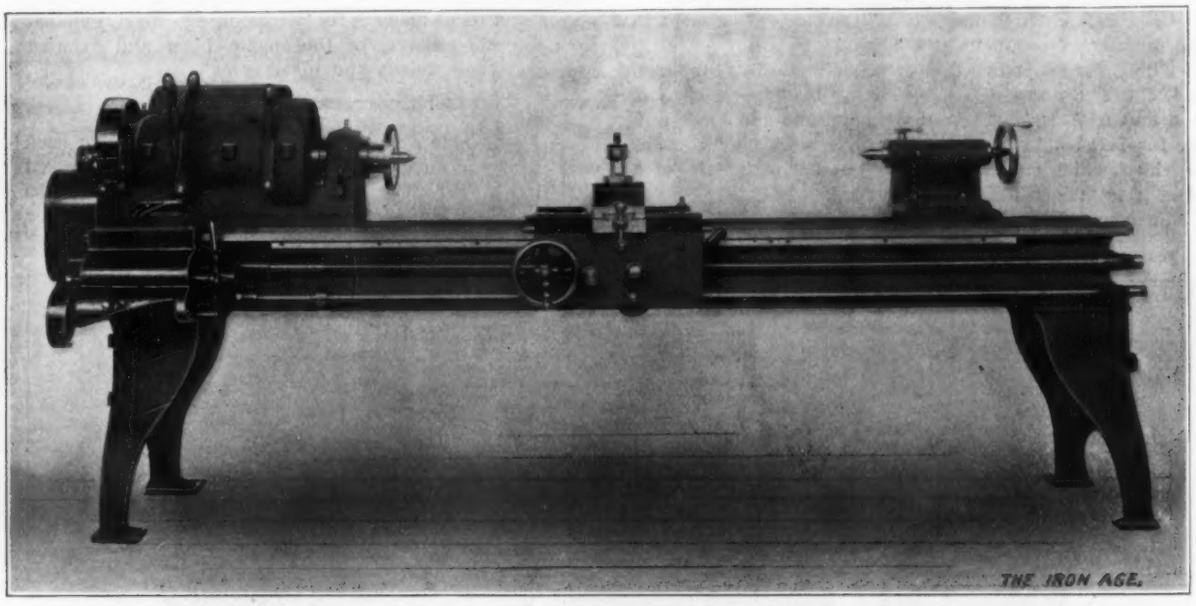

Fig. 1.—The Prentice New 18-Inch High Speed Lathe.

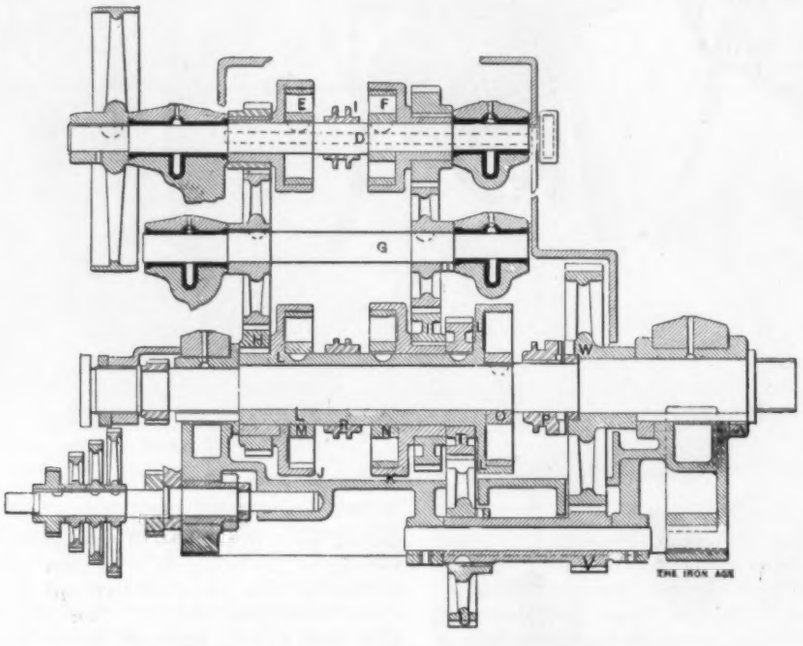

Fig. 2.—Detail of the Speed Changing Mechanism in the Head.

in a new modification of the quick change feed device. As will be seen by referring to Fig. 2, four changes of speed are obtained between the pulley shaft and spindle through an arrangement of gears and friction clutches, and the number of changes are doubled by engaging the back gears by means of a positive tooth clutch. The back gear never travels fast enough to make it impracticable to use a positive clutch for this purpose The result is a ratio of 6 to 1 between the spindle and any friction while the back gears are in use. The driving pulley which is located on a back shaft drives the spindle by means of gearing. The pulley carries a 4-

which slides the friction spool I. Between the spindle and the pulley shaft is located the shaft G, which carries two gears of different diameters meshing with corresponding gears on the pulley shaft, and also gears which are fastened to the hubs of the friction disks J and K. These friction disks run loosely upon the quill L L, which is itself mounted loosely upon the spindle, and which carries the friction disk L′ L′ at its end. The friction rings M and N are keyed to the quill L. The friction ring O is keyed to the lathe spindle. The four high speeds are engaged as follows: With frictions E, M and O, driving directly; with frictions F, N and O,

driving directly; with frictions F, M and O, driving through the intermediate shaft G; and with frictions E, N and O, also through the intermediate shaft. The back gears and the spindle driving gear W run constantly, while the friction spool I is engaged with either friction E or F. By engaging the friction spool and clutch P, which is keyed to the lathe spindle, with the spindle driving gear W the back gear speeds are obtained. If

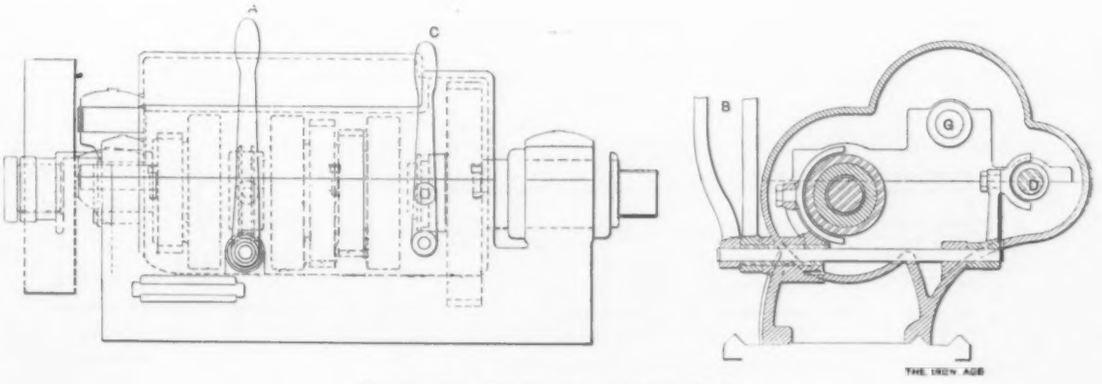

Fig. 3.—Side and End Views of the Head.

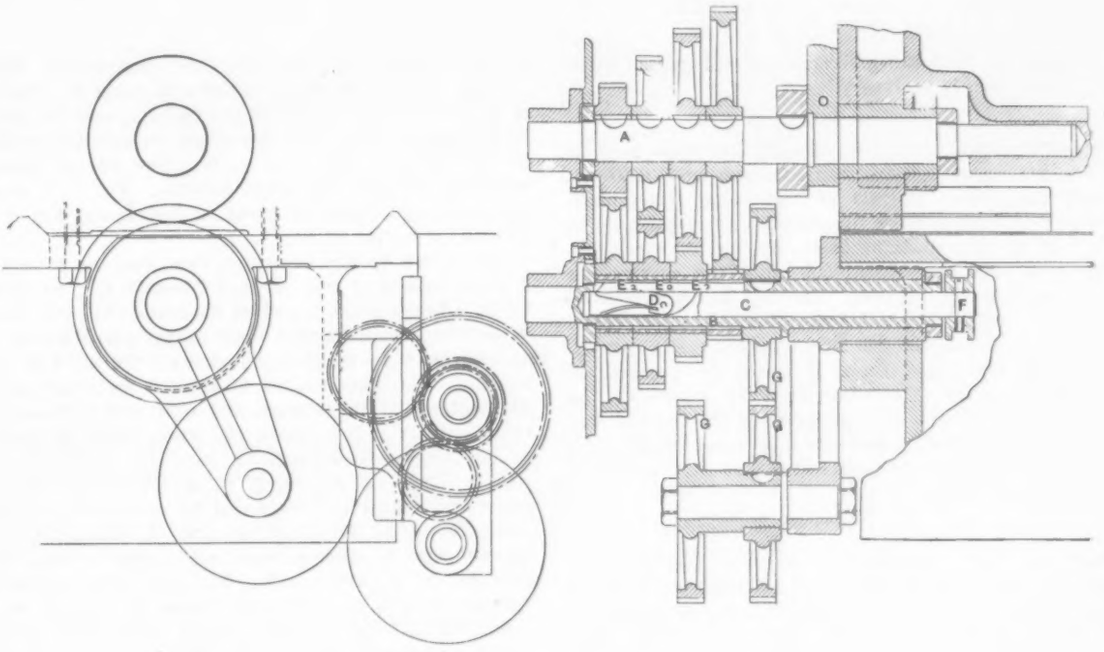

Fig. 4.—Detail of the Feed Changing Mechanism.

desired the lathe is furnished with a two-speed countershaft, to double the number of speeds to 16.

The device for changing the feed and the cutting of screw threads is a radical change from the swing intermediate type, as it does away with raising and lowering an intermediate gear sweep and sliding the intermediate gear laterally to engage with feed gears on the end of the head and bed. A pull spline and spring spline in combination replace the older mechanism. Upon the end of the head stock and in the position usually occupied by the regular feed spindle is a feed shaft, A, in Fig. 4, upon which four feed gears are splined. The shaft is supported at its outer end in a brass bushing mounted upon the gear guard. This shaft with its gears revolves at the same speed as the main head spindle of the lathe. Below the feed shaft is a hollow stud, B, on which are loosely mounted four gears meshing with the feed gears on A. The gears on both A and B run constantly with the main spindle when not disengaged by the usual rocker device on the end of the head stock at O. The two groups of gears are of the ratios 2 to 1, 1 to 1, 1 to 2 and 1 to 4, which in connection with the bank of gears mounted on the side of the head gives a range of thread cutting from 2 to 32 per inch. The feed cuts per inch are 5.7 times the number of threads cut.

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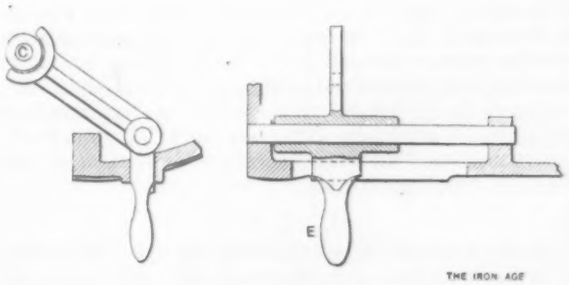


Fig. 5.—Detail of the Handle Controlling Mechanism in Fig. 4.

pull rod C at F, in Fig. 4. The hollow shaft B contains a slot running the full width of the four gears. When it is desired to change the rate of feed, the pull spline C being moved laterally causes the spring spline to be withdrawn from a slot in the bushing on the feed gear, throwing that gear out of use. When the spring spline passes the pin E it immediately engages the next gear. The form of the driving end of the spline makes this action against the pins possible.

The gears G G in Fig. 4 drive the gear H in Fig. 6, which is fastened to the shaft J, on which is mounted a yoke carrying a sliding, intermediate gear, which engages with the several gears mounted on shaft K. There being 11 gears in this bank, 44 changes of feed are obtained. Sliding on the end of shaft K in Fig. 6 is the gear L, which by means of a handle on the front of the bed may be engaged with either gear M on the feed rod or gear N on the lead screw. This device eliminates the necessity of running the feed rod and lead screw together when only one of them is necessary.

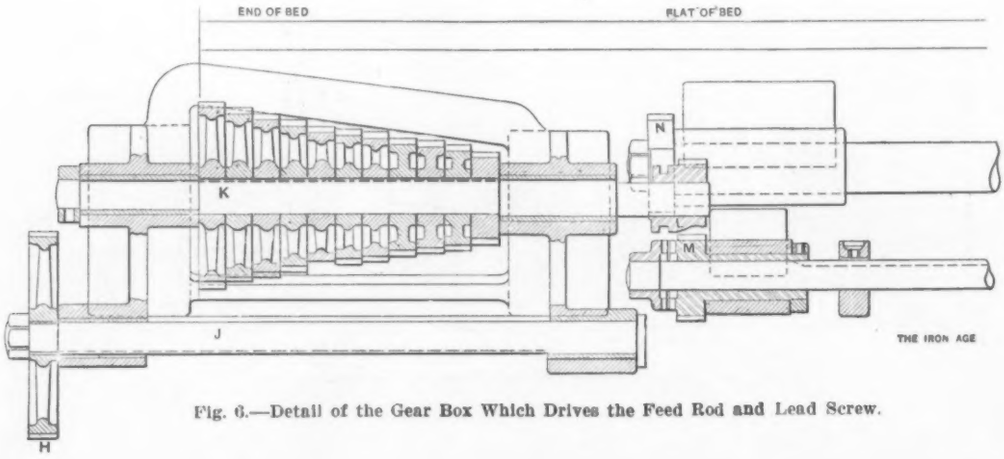


Fig. 6.—Detail of the Gear Box Which Drives the Feed Rod and Lead Screw.

A water-cooled iron wire rheostat has been used at the Nancy Central Station, Paris, for testing a 1000-kw., 500-volt generator. Spirals of iron wire three millimeters in diameter were immersed horizontally in a tank, each spiral containing about 200 feet of wire. Six spirals took 1660 amperes at 500 volts, the current per wire being thus 277 amperes. The test lasted five hours without any evidence of deterioration. Another spiral was then added, and the full 2000 amperes easily carried. Two pumps supplied 2 liters of water per second, entering at 17 degrees C. and leaving at 77 degrees C. As 200 calories per second were supplied by the current, and only 120 taken away by the escaping water, it is calculated that the evaporation of water was at the rate of 0.143 liter per second.

The new British armored cruisers of the Minotaur class are to have a main battery of 4 9.2-inch guns and 10 7.5-inch guns, which is a very powerful offensive force, indeed, for a cruiser. The new guns of 9.2-inch caliber project a shell weighing 380 pounds at a muzzle velocity of 3100 feet per second, giving a muzzle energy of no less than 25,485 foot-tons, equal to the penetration of 12 inches of Krupp armor at a range of 3000 yards, while the 7.5-inch pieces impart to a 200-pound shell a muzzle velocity of 3000 feet per second, and a muzzle energy of 12,540 foot-tons, with a penetrative capacity at 3000 yards of 8 inches of Krupp armor. These figures are suggestive of the advances in gunnery in the last few years. The Texas has 12-inch guns, the muzzle energy of which, at Santiago, was about 25,300 foot-tons.

It has been discovered that magnetite, the black oxide of iron, is suitable for use as an electrode in an arc lamp. The arc flame issues from the negative terminal, and, striking the positive, produces heat. If the positive electrode cannot carry the heat away with sufficient rapidity it becomes hot and gives off light. In the magnetite lamp the positive electrode is a copper segment, which is of such size that it does not get too hot, and therefore does not wear away, forming a permanent part of the lamp. On the other hand, it does get sufficiently hot to avoid the deposition on it of material which may be shot out from the negative electrode, consisting in this case of fused drops of magnetite.

The Forter Charger for Annealing Furnaces.

The accompanying engraving illustrates a new charging machine for annealing furnaces patented by Samuel Forter, chief engineer and manager of the Forter-Miller Engineering Company, Pittsburgh, Pa. Briefly, the machine is a simple apparatus for quickly depositing one or more annealing pots in the furnace, after which it is itself withdrawn. In the accompanying cuts, Fig. 1 is partly a side view and partly a longitudinal section through the center of the furnace showing the charging machine after it has entered the furnace, and the articles to be heated have been deposited on suitable supports in the furnace. Fig. 2 is a plan view of the charging machine with the top plate omitted. Fig. 3 is an end view looking toward the right on Fig. 1, and Fig. 4 is a transverse section of Fig. 1.

As shown on the drawings, this machine consists of a truck formed of two parallel I beams, 1, connected on top by a heavy plate, 2, and on the bottom by cross bars, 3. When the I beams are in their lowest position they rest on sleeves, 4, in which are journaled the axles 5 of the wheel 6. The wheels 6 run on rails, 7, which are laid in the bottom of the furnace and extend a sufficient distance outside of it to allow the whole charging machine to be completely withdrawn from the furnace. The wheels 6 run on rollers, 8, to reduce the friction and allow the charging machine to be moved easily. Each sleeve, 4, has in the middle an arm, 9. The arms 9 are all connected together at their upper ends by tie rods, 10, provided with turn buckles, 11. The arm nearest the furnace door is also pivotally connected to a screw, 12. A nut, 13, to which the hand wheel 14 is keyed, turns on the threaded end of screw 12. The nut 13 is journaled in a cross head or sleeve, 15, having two trunnions, 15′, to which are pivoted the upper ends of the bell crank levers 16. The angle of the bell crank levers is connected to the pivots 18, carried by the brackets 17, which are firmly bolted to the rear end of the truck or charging machine. Two links, 18′, are also pivotally connected at their lower ends to the other ends of the bell crank levers 16, and have at their upper ends a pin, 19, to be engaged by the hook of a crane chain, 19′. The cross head also serves as an abutment against which the nut works when drawing the screw 12 through it. The sleeves 4 have each two short arms, 20, cast on just below the I beams of the truck, and are each provided with a pin, 20′, at its end. Bearing pieces or journals, 21, are riveted to the under side of the beams 1, in which the pins 20′ of the arms 20 rest. Each arm, 9, with its connected sleeve, 4, and arm, 20, constitutes a bell crank for lifting the truck body. The annealing boxes 22 are supported on stools, 23, as commonly used in annealing furnaces, and 24 represents supports in the furnace on which the annealing boxes rest after they have been deposited in the furnace by this machine; 25 is the door opening, 26 the roof, and 27 the back wall of the furnace.

The manner of charging the articles to be heated into the furnace is as follows: The truck or charging machine

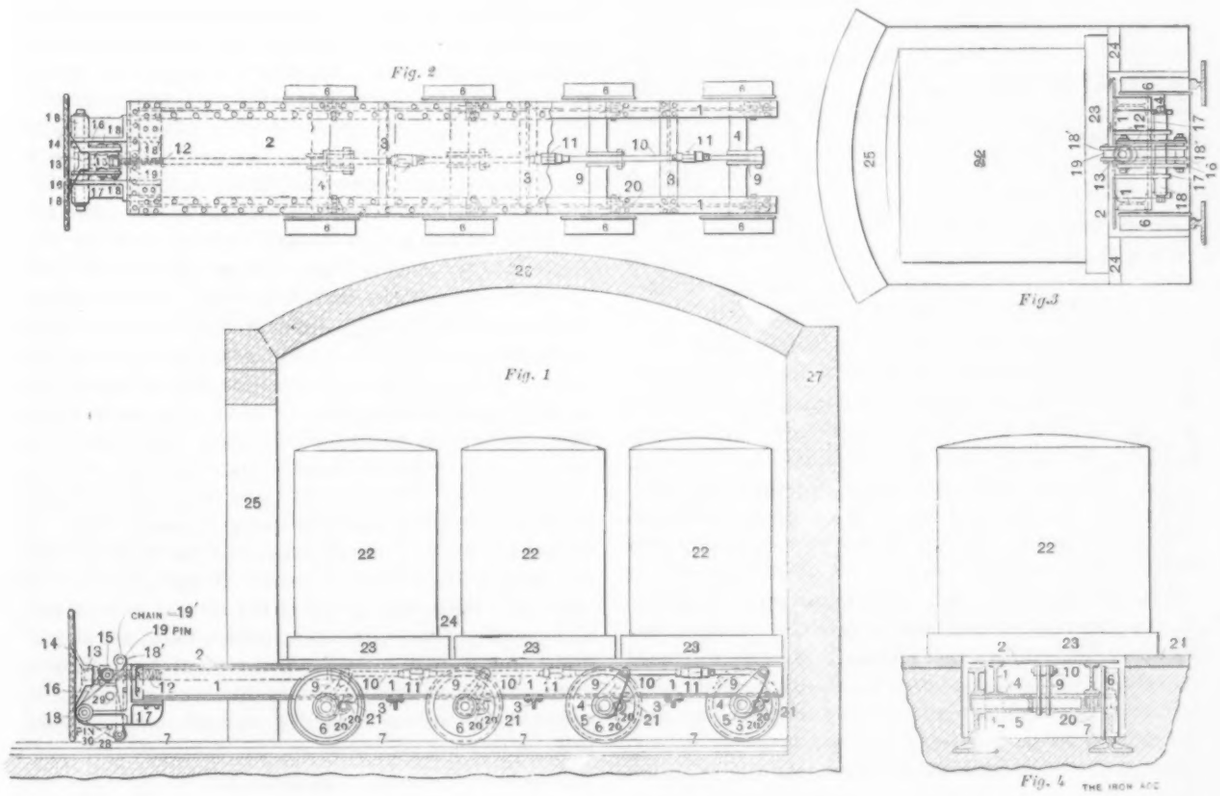
stands outside the furnace on the rails 7 ready to receive the pots, and the truck beams 1 are in their lowest position, as shown on the drawings; the hand wheel 14, which is keyed to nut 13, is given a sufficient number of revolutions to cause screw 12 and with it tie rods 10 and long arms 9 to move to the left far enough to bring the short arms 20 in an almost vertical position. The pins in the short arms resting in the journal 21 on the under side of the I beams 1 will then raise the body of the truck until the top plate 2 is somewhat higher than the top of the supporting plates 24 in the furnace. The stools 23 with the boxes 22 upon them, which are wide enough to extend beyond the sides of the top plate of the truck, are now deposited on the truck and the apparatus is run into the furnace.

When in proper position in the furnace the body of the truck is lowered by turning the hand wheel in the opposite direction, allowing the stools 23 to rest on the supports 24. The beams 1 are then lowered still further until they rest on sleeves 4, in which position a clearance space is left between the bottom of the stools and the top of the truck plate 2. The charging apparatus or truck is now withdrawn from the furnace and the furnace closed. When it is desired to take the charge out of the furnace the truck is run into it with the truck body in its lowest position, as shown on the drawings. The truck body is then raised as before until the stools 23 are lifted from their supports 24, and a clearance space is left between the bottom of the stools and the supports. The truck is then withdrawn from the furnace with the charges resting on it, or they can be taken off the truck by a crane.

The bell cranks 16 are provided with the links 18' in order that the raising of the truck body can also be done by a crane instead of by the hand wheel 14. By simply hooking the crane chain onto the pin 19 of the links 18 and raising the chain the nut 13, which is in engagement with the cross head 15, will move to the left, taking the screw 12 and tie rods 10 with it, and thus raising the truck body. The bell cranks will be turned until the hole in the bell cranks and the hole 29 in the brackets register, when a pin, 30, is inserted through the holes, which will prevent the bell crank from moving back when the chain is taken off. If it is desired to lower the truck, the chain is again hooked to the pin 19, the pin 30 removed, and the chain lowered until the truck beams 1 rest again on the sleeves 4.

The lifting arrangement is simple and at the same time very powerful, requiring only a minimum force to operate it. The charging or moving of the car into and out of the furnace can be done by hand or by a traveling crane such as is usually employed in sheet and tin plate plants, or other power can be applied.

This machine it is stated can be installed to suit the arrangement of any ordinary annealing furnace at a very low cost. It is manufactured by the Forter-Miller Engineering Company, Westinghouse Building, Pittsburgh, Pa.



The Forter Charger for Annealing Furnaces.

A ship canal to connect the Rhine and the Danube, which will have a total length of 181½ miles, has been proposed. The cost is estimated at about $35,000,000, of which $10,000,000 would be absorbed by the canalization of the River Neckar, which is one feature of the scheme. It is thought, however, that an asset value of $6,000,000 or $7,000,000 would acrue from the water power of the various locks. The length from Mannheim on the Rhine to Neckarems on the Neckar is 110 miles, and thence to the Danube is 71½ miles. This canal would place the now more or less isolated kingdom of Wuerttemberg in the middle of the largest and most important waterway of Europe.

A gas well in the Nineveh region of Greene County, Pa., has shown what may be said to be the highest pressure ever observed in any natural gas well. The well struck the Campbell's Run oil sand, and, though the volume of gas was relatively small, the rock pressure finally passed the limit of the gauge, which was 1500 pounds per square inch, and blew off the 2-inch pipe by which the well was shut in. As this pipe was supposed to be tested to 2000 pounds, the ultimate pressure shown by the gas was probably not less than 1600 pounds per square inch. A well in Lewis County, W. Va., has a record of 1125 pounds per square inch, which is the highest known in that State.

The Iron Age

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The Open Shop in the Foundry Trade.

The open shop is making great headway in the foundry trade. The change which has been wrought in this respect in the past two years is one of the most remarkable developments of the times. For some years previously the work of unionizing foundries had gone merrily forward and had progressed to such an extent that an open foundry had become the exception. Of course, the flush times contributed largely to the success of the union propaganda. When an employer has a demand for more work that he can turn out and finds difficulty in securing the help he needs, he feels that he cannot afford to antagonize his men. Under such conditions practices are tolerated which would not ordinarily be countenanced. Even though it may be plainly seen that the efficiency of the workman is being impaired by the restrictions imposed by union regulations, the wrong thus suffered is endured because it would be too costly to endeavor to check or correct it. In the case of many foundrymen, however, the growth of unionism was not regarded with serious apprehension, as the Iron Molders' Union had the reputation of being a conservatively managed organization, whose leaders were amenable to reason. Relations with such a union were not repugnant, even though they might not be heartily welcomed. But with the growth of the union during the flush times came a change in the character of its leadership. The tolerant, conservative and diplomatic management was succeeded by officials who aimed at absolute control in every foundry in which the union had a foothold. They not only sought to dictate rates of wages and hours of employment, but the quantity of work done in a given time, the use of molding machines, the employment of apprentices, and the hiring and discharge of workmen. Although it was practically impossible to arbitrate any questions of serious moment with them, they sought to apply arbitration to such matters of purely shop management as the refusal to discharge a workman because he had become delinquent in his union dues.

Possibly the power of the union might have grown until it completely dominated the foundry trade if the rash attempt had not been made to enforce a universal nine-hour day. Upon that rock the union, if not wrecked, was so badly strained that it has ever since been leaking and losing foundries from its control. Wherever an employer has decided to cut loose from union domination, and has made a determined struggle for independence, he has succeeded in establishing an open shop. The list of members of the American Foundrymen's League, which is composed of employers who will not treat with labor organizations, shows that open shops are now to be found in every section of the country, even in locations known to be strongholds of unionism. This is a new organization, which only came into being the past summer, and is largely composed of firms whose shops have gone through a contest with the Iron Molders' Union and have been freed from its control. Time was when the defeat of a union strike did not necessarily mean a subsequent refusal to treat with employees as unionists, but latterly this has been the practically invariable rule in the foundry trade. The organization of such foundrymen into a militant body like the American Foundrymen's League shows that a determined effort is to be made to maintain the measure of independence which has been gained by them. It may quite safely be assumed, also, that the action taken at the recent convention of the National Founders' Association will not lead to the tightening of union control over the foundries operated by its members.

At this critical period for the Iron Molders' Union the developments of the past week at Cincinnati are likely to prove exceedingly trying for that organization. Even though its president may succeed in exculpating himself from the serious charge upon which he has been arrested, the fact seems to be well established that prominent officials of the union are responsible for the murderous attempts upon the lives of nonunion molders and the destruction of valuable property. The perpetration of such acts indicates desperation among the union leaders, as they see their power waning. The resort to violence is almost invariably a confession by strikers that they are being beaten. Fortunately for the sake of law and order, the responsibility for the criminal acts has been definitely placed, and without the lapse of much time. Under such circumstances public opinion is not only aroused regarding the outrage, but it is at once able to assert itself against the perpetrators. It will take a long time for the Iron Molders' Union to regain its old reputation for moderation, and meanwhile the work of opening closed shops is likely to proceed with greater vigor than ever. In the union ranks are undoubtedly many men who are fair minded, as well as upright and honorable, and who have been awaiting an opportunity to assert their independence of union obligations and restrictions without subjecting themselves to the taunts of their fellow workmen. The union stands to lose the support of such men as a result of the Cincinnati tragedy. Under its present leadership it will certainly not refrain from fighting hard, but the movement toward the open shop may be expected to continue to gather strength until a closed foundry becomes the exception.

Modern Tools and Modern Mechanics.

The very great changes that have been wrought in machine shop equipment during the past few years have hit many of the older mechanics pretty hard. A good deal of significance is contained in the remark of one such man: "I have had to learn over my trade three times and I'm too old to learn it again." He had been given a difficult job to do on a modern engine lathe containing the latest useful mechanisms for saving labor and procuring accurate work, and because he did not understand the tool he failed in his efforts until a younger machinist came to his assistance. "Give me work I can do, if you will," he said to his foreman, "but don't ask me to learn my trade over again." The high grade mechanic has to be wide awake to work where modern tools are constantly replacing those of older type or he will fall behind. He cannot stand still. The changes are too frequent and too radical to permit him to loiter with older ways. He may have been up at the front of his trade a decade ago and yet have to take a back seat to less experienced workmen to-day. If the man has push he can keep learning, but he must maintain the push in spite of advancing years, or it is his

own fault if he has to make place for another. The introduction of the new tool steels was a great strain upon many such men, who had to take a long stride forward so suddenly that their usefulness was seriously menaced. The older blacksmith is another craftsman who suffered by this steel, because he could not realize that the cherry red he had learned with his trade and followed through so many years must give way to the white heat of the new steel.

Chicago Preparing for a Boom.

Chicago is experiencing a revival of the spirit of '71, which rebuilt the city on the ashes of October 9. A wave of optimism which has prevailed since the election crystallized last week in the form of a great mass meeting, in which the leading figures in the city's commerce and industries took enthusiastic part. Almost every speaker echoed the conviction that the city was entering upon the greatest period of its history. This idea is in the very air of Chicago to-day. Optimism has suddenly displaced the pessimism which has generally prevailed since the dark days following the World's Fair of 1893, and one rarely hears now the familiar lament that the city is losing its lake commerce because of tunnel-obstructed rivers, its rail commerce because of rate discriminations, its industries because of labor union lawlessness, and its civic pride because of misgovernment. Instead of wasting its energies in gloomy lamentations over these existing evils, the city, through organizations of resolute men, is taking prompt and vigorous measures to correct them, with every probability of success.

This change of heart, this new courage, this fresh grip on itself is to be attributed to a number of causes. Chief among these, of course, is the wealth of the agricultural West, due to bounteous crops and high prices; but more directly influencing the optimistic wave is the fact that the city is to have a new charter which will permit it to do things that a well regulated modern metropolis should do. Another factor in the revival is the conviction that the deadlock between the traction interests and the city government is about to be broken, and the citizens at last be given transportation facilities somewhere approaching their requirements. A fourth cause of felicitation is the approaching completion of a freight tunnel system that will relieve the congested streets in the downtown district of perhaps 50 per cent. of their wheeled traffic with its attendant confusion and expense. A fifth element is based on a discovery, not of a Chicagoan, but of Commissioner Eagan, of the National Metal Trades Association, that instead of being the worst city in the world, industrially, Chicago is to-day one of the best: that there have been fewer strikes in the past year in proportion to capital invested and men employed, and that a greater proportion of these resulted favorably to the employers, than in almost any large industrial center of the country.

Chicago has been for years in disrepute among Eastern capitalists and even with its own moneyed interests in the matter of investment in public utilities. This was illustrated by the fact that, at its inception, neither New York nor Chicago capital could be interested in the nois telephone and freight tunnel projects, and that the $10,000,000 already invested in these great enterprises was finally secured from Scranton, Pa. The city's bad name financially came from a variety of causes, chief of which was the open hostility to vested interests evinced by the city government, and, as a close second, the bad eminence of the city as a hotbed of socialism and anarchistic labor agitators, following the Haymarket riots and lesser upheavals of later years.

Civic righteousness has, on the surface at least, been brought to such an exaggerated degree of perfection in Chicago that many good measures for the improvement of the city have been prevented of passage, as members of the council feared the lash of a unitedly hostile press to such an extent that they would vote down any measure that looked like a franchise rather than risk the inevitable imputation of "boodle" that would be shouted in headlines the following morning. This condition has reached such a point in recent years that capitalists high in general esteem for public spirit and good citizenship actually sighed for the "good old days" when the worst of franchises could be engineered through the City Council by "seeing" the right aldermen, instead of the present council that is so aggressively honest that it would not risk its reputation for virtue by granting the best of franchises on any terms whatever.

As indicated above, the newspapers of Chicago made it fashionable to abuse Chicago, and, in order to discredit its government, to paint lawlessness in its blackest colors; but this fashion has suddenly changed and a new force is actively booming the city and its industries. That this boom is more than psychological is illustrated by the following rough estimates of expenditures to be inaugurated in 1905:

Track elevation and other improvements of steam roads	$40,000,000
Improvements by traction interests	20,000,000
Freight tunnel extensions and equipments	20,000,000
Drainage district operations	15,000,000
Downtown office buildings	15,000,000
Municipal sewerage, water and light plants and extensions	15,000,000
Streets, parks, schools, &c	15,000,000
Municipal street car subway	10,000,000
Total	$150,000,000

These estimates may vary greatly individually, but the total is not likely to fall short of the sum named. Add to this the $50,000,000 that will undoubtedly be expended in private and industrial building enterprises during the 12 months of 1905, and we have a total of $200,000,000 in expenditures that seem to be immediately in sight for permanent improvements within the city limits. More than half of this vast sum will be paid to labor, and if sane counsels prevail in industrial circles, including both employers and employed, there will be a job for every man at excellent wages.

Railroad Officials and Manufacturing Corporations.

If railroad companies adopt a rule prohibiting their officials from holding stock in manufacturing corporations of which the railroads are customers, it will very likely mean radical changes in railroad directories, as well as changes in ownership of manufacturing stocks. Such a movement is on foot, according to report. It is instigated by a committee of stockholders of important railroads, the purpose being to bring about a mutual agreement among all the railroads, if possible. The motive back of the movement is obviously to prevent possible favoritism in the giving of contracts, instead of the opening of bids to all comers. Such a rule would produce complications which are not apparent at first thought, because railroads are consumers of vast numbers of commodities, in their equipment and operation, in their shops and stations, and in the hundreds of things that enter into the comfort of patrons of the modern American railroad. It is doubtful whether all the men who make up the boards of di-

rectors of the railroads would be willing to give up their holdings of stocks in such companies. To compel them to do so would in a sense be to accuse them of unfair influences to secure favoritism to enrich themselves in the matter of dividends. Consequently, it is doubtful if such a plan works out as its promoters would expect.

Mexico Abandoning the Silver Standard.

The purpose of the Mexican Government to place its currency on what is substantially a gold basis will be greeted with more than ordinary pleasure by many industrial and commercial interests in the United States. Hundreds of millions of dollars of American money are invested in Mexico, and many American houses have intimate commercial relations with that country. Consequently the fluctuations of the Mexican currency based on the market value of silver have been a source of much annoyance in the United States, in spite of the fact that a gold payment clause usually enters into contracts between business houses of the two countries. A currency of varying purchasing power must always make the marketing of goods more difficult, and brings with it the element of speculation, which is undesirable. This is especially evident in the Chinese markets, where different commercial centers have varying silver values, so that figuring the cost of goods for one port requires a knowledge of the silver market of that particular section, and the Chinese silver market has sudden and violent fluctuations, though not so marked as formerly. Mexico is not nearly so serious a problem as China, excepting that the volume of business through American houses is greater and the matter comes home to more people here in the United States.

The bill as prepared for the Mexican Congress, and which is said to be pretty sure of becoming a law, does away with the free coinage of silver to the extent that "mints will not be obliged to coin precious metals presented to them, but the issuance of coin money of all kinds is reserved for the Executive, so that the latter may exercise his powers in accordance with the laws and in advisable quantities." The common silver peso, commonly known as the Mexican dollar, will have the arbitrary value of 75 cg. of pure gold, or just one-half the value of the American dollar; and smaller coins will have a proportionate value. The bill gives the Executive arbitrary powers, including one that will interest the Far East and those having business relations there, for he is authorized to "coin for exportation pesos of designs antedating the present issue," which will have a design so entirely its own as to be easily distinguishable from the Mexican dollar of to-day. To prevent the importing of this baser Mexican currency in circulation elsewhere—in the East the aggregate value reaches an enormous figure—the Government plans to place an import duty so high as to be altogether prohibitive. The Mexican treasury, it is said, is now strong enough to meet the necessary demands incident to the redemption of the new silver peso in gold.

The law as proposed makes concessions to the silver mining interests of Mexico, to offset to some extent the abolishing of the free coinage of the standard peso, by authorizing the Executive to modify the laws governing taxation of precious metals, taxation of mining claims in favor of those producing precious metals, and "to organize offices which, without loss to the public treasury, may advance money on the value of silver bars, affording the holders thereof facilities for the sale of bars on the best possible terms, and to this end to make suitable contracts at home and abroad." The Executive also has power to reduce the tariff on machinery and materials entering into mining.

Activity in the New England Metal Trades.

The various labor bureaus of New England report a very material enlargement in the number of requests for men in the metal trades. All through that section business has increased with great rapidity, until many establishments that were almost entirely idle during the summer are now on full time. Reports come from many shops of the necessity of putting on night shifts. The machine tool builders are sharing prosperity with other industries, some of them already making the report that they have about all the business they can attend to. A month ago these concerns felt little encouragement, excepting that inquiries were abundant. Now the inquiries have ripened into orders.

CORRESPONDENCE.

The Dry Blast.

To the Editor: In the absence of further data it is difficult to account for the remarkable reduction in coke per ton of pig iron shown in Mr. Gayley's paper read before the Iron and Steel Institute. The elimination from the blast of 69 pounds of moisture per ton of pig iron would, according to the formulæ of Bell and Gruner, account for only 200 pounds of coke, yet the actual reduction was more than double this amount, notwithstanding the fact that, owing to the reduced volume of dry air, there was carried into the furnace by the blast a less number of heat units equivalent to 110 pounds of coke.

It is to be hoped that Mr. Gayley will make public the data necessary to make up the heat equation of the furnace while using dry air, so as to make a comparison such as was made by Sir Lowthian Bell in the discussion of Mr. Gayley's paper, "The Development of American Blast Furnaces, with Special Reference to Large Yields," published in the Transactions of the American Institute of Mining Engineers, Vol. XIX, page 959.

N. M. LANGDON.

Secret Reappraisement Hearings Sustained.—The first skirmish in the fight against the Treasury Department's policy of secret reappraisement hearings has been lost by the importers. Secretary Shaw, after a conference in Washington on November 23 with W. Wickham Smith, counsel for George Borgfeldt & Co. of New York, refused to entertain Mr. Smith's request for permission to examine the evidence on which invoice values on more than 100 importations of chinaware by Borgfeldt & Co. were advanced about three months ago. Mr. Shaw took the ground that if the policy of secret reappraisements were abandoned by the Department the Government would find itself cut off from most of its sources of information, and he declared that he could see nothing in the case under consideration to justify a departure from the rule of secrecy. The whole question of secrecy in reappraisements is one of vital interest to all importers, and the Borgfeldt case has been watched with close attention all over the country. Mr. Smith, who is managing the case for Borgfeldt & Co., declares that this is only the first step. He declines to say what the next step will be, but it is probable that a way will be found to open up the question of the legality of this method of reappraisement before the courts.

The coal production of the United States in 1903 was over 80 per cent. of that of Great Britain and Germany combined, these two nations being our principal rivals in this field. The figures for the three countries were, respectively, 319,000,000 gross tons, 230,000,000 gross tons and 162,000,000 metric tons. France produced about 35,000,000 metric tons and Belgium 24,000,000 metric tons.

Comparative Tests of Engine and Turbine Driven War Ships.

The British Admiralty has concluded a series of interesting tests to ascertain the relative efficiency and economy of steam turbines and reciprocating engines in war ships of considerable size. As described in a recent issue of *Engineering* (London), three sister ships were used in the tests, which were third class cruisers of 3000 tons, 330 feet long, 40 feet beam and about 14 feet 6 inches draft, during the trials. One of the ships is propelled by Parsons steam turbines, the other two by reciprocating engines that suggest the destroyer type. Each is fitted with "express" water tube boilers, with a specified coal limit not to exceed 1 pound of coal per square foot of heating surface.

In the reciprocating engines the three cylinders are respectively 24¼, 38½ and 42¼ inches in diameter, with 24-inch stroke. The turbine equipment of the Amethyst is somewhat unusual. To obviate the objection of low economy at cruising speeds, at which war ships run about 95 per cent. of the time, the ship is fitted with separate turbines for this special purpose. At the forward end on each side is placed a high and intermediate pressure cruising turbine, both having 44-inch drums, but different blading. On the same shaft is the usual low pressure turbine for going ahead and the astern turbine. On the center shaft is the main high pressure turbine, with 60-inch drum.

By this arrangement a wide range of expansion is obtained. The steam first enters the high pressure cruising turbine, passes into the intermediate cruising turbine, thence to the main high pressure turbine, and through the low pressure turbines working *in vacuo* to the condenser. This arrangement is adopted up to 14 knots speed. On the trial at 18 knots the high pressure cruising turbine was cut out, the steam initially entering the intermediate cruising turbine, while in one low pressure turbine there was a pressure of 1.3 pounds and in the other a vacuum. At full steam both cruising turbines were cut out, the steam entering the main system only.

The results of the tests were nearly all in favor of the turbine ship. The ships were designed for a speed of 21¾ knots, with 9000 indicated horse-power. The turbine vessel made 23.63 knots steaming easily, while her sister ships could make no more than 22.34 knots The Amethyst showed a coal consumption of 10 per cent. less per hour, which would make its cruising radius at 20 knots with its 750 tons of coal 3160 miles. as compared to 2140 miles of the other ships. There was no vibration of the turbine ship, which assists accuracy in gun firing. The air pressure in the stoke hole was ½ inch less, which means less stress on the boilers. The time required in stopping from full speed ahead or in starting from a dead stop was from 7½ to 20 seconds, and only a few minutes were required to increase the speed from 10 to 22 knots, all of which is a decided tactical advantage. The hight required for the turbine machinery, which is of almost exactly the same weight as the reciprocating engine equipment of the sister ships, is 20 inches less, enabling it to be more easily housed under the protected deck.

At low power for a 10-knot speed the water consumption of the turbine was 23 per cent. higher than in the other ships, but it is claimed that this will be reduced when the exhaust steam from the auxiliary engines is passed into the low pressure turbine receiver instead of into the condenser. At 14 knots the economy of the ships was about equal. With the speed increased to 18 knots, however, the fuel consumption of the Amethyst was 20 per cent. less, at 20 knots it was nearly 30 per cent. less, and the improvement was still greater at higher speeds. It is also stated that important economical improvements made since the Amethyst was designed would still further increase the ship's efficiency.

Plans for a 20,000-ton battle ship, following the ideas recently enunciated by the famous Italian naval architect, Cuniberti, it is reported are being prepared by the United States Navy Department. The radical departure from existing designs lies in the armament. Instead of a main battery of four heavy guns, backed by a submain and secondary battery of guns ranging in caliber from 8-inch to 1-pounders, the main battery of the new ship is to consist of 10 12-inch guns in turrets, with a secondary battery of at least 20 3-inch rapid fire guns. This would give her by far the heaviest long range battery afloat, while the heavy battery of 3-inch guns would form an excellent defense against torpedo boats. No intermediate guns would be fitted. The speed would be about 16 knots. Other advices regarding this design indicate that 4 12-inch and 8 10-inch guns would be mounted, instead of 10 12-inch pieces. The whole proposition, however, is problematical, and it may be that nothing will come of it, as the cost of a single ship of such size would be enormous.

Jail Penalty for Picketing.

Judge Marcus Kavanagh of the Superior Court of Cook County, at Chicago, rendered a decision last week declaring constitutional an Illinois law passed in 1877 which provides a jail sentence, with no alternative, for any one found guilty of willfully or maliciously impeding the business of any corporation, firm or individual. Other laws on the statute books which have been invoked heretofore in picketing cases provide either fine or jail sentence, or both, and in a vast majority of cases union pickets convicted of violence or assault were simply fined, the unions paying the fines and the culprits going free. The text of the law, which was enacted during the riotous times incident to the panic of 1876 and 1877, and is section 109, chapter 114, of an act pertaining to railroads and warehouses, reads as follows:

> If any person shall by any act or intimidation willfully and maliciously impede or obstruct the regular operation and conduct of the business of any railroad or any other corporation, firm or individual, except by due process of law, he shall be fined not less than $20 nor more than $200, and shall be confined in the county jail not less than 20 days nor more than 90 days.

Fred. Olson, the president, and Frank Schorn, a business agent of the Chicago Janitors' Union, were sentenced to jail in a justice court under this law, as the result of the efforts of Dudley Taylor, attorney for the Chicago Employers' Association, for assaulting and injuring a nonunion janitor in one of the downtown office buildings. The labor leaders at once sued for a writ of habeas corpus, alleging that the law was unconstitutional and applied only to railroads; but Judge Kavanagh decided that the law was constitutional and that it applied to all cases of assault and intimidation made for the purpose of obstructing business, whether the injured party was a railroad or any other corporation, firm or individual. Another feature of the law quoted is that it relieves the complainant of proving that the assault, if any, was committed with a deadly weapon, or that threats had been made. In other words, proof of any act that is malicious and intended to obstruct or impede the business of any corporation, firm or individual is sufficient to warrant the short jail sentence specified, in addition to a fine, in the option of the court or jury.

A compound gas engine has been built with two high pressure cylinders and a single low pressure cylinder between them. The high pressure cylinders work on the Otto cycle, the engine receiving one impulse from them each revolution. The exhaust from the two explosions is expanded in the low pressure cylinder, the crank of which is 180 degrees behind the high pressure cranks. Thus at every forward stroke the low pressure cylinder takes the exhaust gases from one of the high pressure cylinders. The total effect is thus to produce an impulse every half revolution. With a 12 horse-power engine 13 brake-horse-power were obtained with the low pressure cylinder in use, and only 8.9 horse-power without it, 46.2 per cent. being thus added to the power by the use of the low pressure cylinder and without the expenditure of any additional fuel.

The Engineering of Industrial Buildings.

BY D. C. NEWMAN COLLINS.

The necessities for industrial economy have become imperative to a degree that it becomes a most important duty of the management to keep in touch wih modern ideas and mehods. Old plants have been modernized to improve their productive efficiency and the improvements have shown a reduction in operating costs sufficient to warrant a lowering of prices to invite the larger volume of business demanded by the improved conditions. The general use of advanced methods, together with the influences of competition, will promote a steady lowering of market prices until the manager will begin to scratch out costs of production again and he develops once more the alarming fact that prices and costs are slowly but surely converging toward the same point.

It becomes evident that the word "modern" has only a comparative meaning. His plant is modern only as compared to that operated by his competitor who has "gone him one better" in the matter of up to date equipment and is now selling dangerously near his actual cost. A thrifty manager will not become disheartened but will immediately search for new devices to save labor; new power that will show an economy; new equipment that will handle more work and do it quicker and better. One mechanic earning $1000 per year is equivalent to a 4 per cent. investment on $25,000. If he can install equipment or devices that will double the amount of work this man can handle, he practically increases his working capital $25,000 and that by means of a very small outlay of money.

The Value of Engineering Specialists.

It is very improbable that the manager of any large industrial concern can keep in personal touch with all details of the swift wheels of progress. He cannot afford to attempt it except in a general way. Such a study means the digestion of great massses of literature; comparative consideration of costs, maintenance and capacity of each of the hundreds of ideas produced every day and also practical experience in the actual operation of each. This condition has created a tendency for engineers to concentrate on their various specialties and to offer independent and loyal services to any owner who desires advice on wholesome industrial conditions. These men are in continual contact with the trials, results and failures of items under their special observation. The value of such experience as this, co-operating with the owner's organized force, can not be emphasized too strongly. When these engineers are selected as being absolutely free from any commercial interest in the use of any special brand of material, when they have nothing to sell but their knowledge and experience, when their entire aim and ambition is to produce living examples of economy in their special line, and when their engagement is indorsed by important previous accomplishments, then it would seem that every possible means had been employed to assure success and the value of the association would become evident in every detail of the issue.

Not only will the achievement of events be augmented by good judgment, caution and skill, but the manner of procedure will involve methods that are conducive to economical buying. These engineers are skilled in the ethics of contracting, brought up to see things from a contractor's point of view as regards economy and profit and are technically equipped for success. Their fee can hardly fail to assume the classification of an investment rather than to be looked upon as an expense. An engineer so trained should earn his entire fee by careful buying alone, all other benefits being clear profit to the owner.

The power question propounds a most complex problem and an important one. It can only be solved by a proper consideration of location, local resources in fuel, shipping facilities and the general physical reqhirements of the case. The capacity can only be determined by the examination of the machine layout, which is in itself a matter of long and special study. Approximate estimates of cost and results must be compared to afford means to judge the merits of various schemes. His shop superintendent together with a good mechanical engineer and one or two machine agents can do it and at the same time rough out a preliminary plan that will consume months to complete.

The Development of Building Plans.

In the mean time, something must be done with the buildings. It takes time to finish them and they should now be under process of development. The increasing usefulness of the power crane and conveyor in buildings marks the advancement of the greatest element of economy in modern industry. For this reason the buildings should be considered and treated as an actual part of the machine, combining every factor to make it one complete and efficient unit.

Buildings can only attain their maximum degree of efficiency when they have been designed for the work in view and do not come under the heading or classification of architecture, as it is generally understood. Ornamentation is out of place, embellishments are useless, frills are superfluous and all are an unwarranted expense. The amount of relief given in the treatment of these buildings, on the outside, should be limited to such requirements of the structure as tend to give it strengh, firmness, permanence and an appearance that will evince comfort and common sense. The inside is, however, much more important as an earning factor. Here the human equipment lives, breathes and grinds out product. The cost of maintaining one man in service is sufficient to demand consideration for his mental and physical comfort. Mechanically, he is supplied with every known device to increase his productive capacity; but of what use in a stuffy atmosphere, poor light, miserable sanitary conveniences and repulsive environment? The earning capacity of a workman, as well as his commercial ability, depends largely upon his mental attitude toward his employer and his physical condition. To keep these in proper order, his every need must be anticipated and liberally provided for. Poor light, impure air, low temperature or filth are just as injurious to him as dull tools, dry bearings and poor adjustment are to a machine and far more damaging to the owner's profit. As to light, a thorough study should be made to avoid the dazzling effects of direct sun's rays. Light should be so well diffused that there are no shadows; ample but not brilliant. North light is always desirable and flat skylights are to be condemned for practical and physical reasons.

Ventilation should be ample and under easy control; fresh air must be had even if air flues are necessary to convey it to the shops. A workman must have room to breathe and to move around to enjoy it. In shops of large cubical contents the prevailing fan system of heating is probably the most satisfactory. The cold air is drawn inside registers along the walls, near the floor, and is carried to the heating coils of steam pipe, either live or exhaust steam being used, where it is mixed with proper quantities of fresh air and distributed by means of metal ducts and spouts. The air is thrown from central points toward the shop walls, thus causing a steady flow of air toward the cold walls. This system also creates an imperceptible pressure throughout the building that serves to prevent cold winds sweeping in through open doors.

Whether a man is employed in an office or in a foundry, he needs to be clean and decent. Dirt is necessary but has its limitations. On the surface it may be the result of honest labor, but do not let it sink deeper merely for want of conveniences to remove it. All classes of labor should be provided with ample facilities for keeping their own self-respect and that of others. Toilet and lavatory fixtures, as well as locker space, should be judicously located and designed. Of course discretion should govern the planning to insure protection from the abuse of these conveniences and to provide proper means to enforce discipline.

The Steel Frame.

The designing of the steel frame is a most important part of the work and one that must cover even conditions that are not definitely established. The rough machine layout may be used as a basis for studies of the desired crane facilities, and every device that will assist the out-

put capacity of the plant, particularly in regard to the convenient handling of material during the various processes of manufacture, must be provided for in these plans. For instance, single tools, or groups of tools, working heavy material, can be greatly benefited by the help of a local jib crane for individual use. The overhead crane has many duties to perform and may be required elsewhere when needed. Various systems of crane equipment may suggest themselves which, together with hoists, trolleys and ground tracks, will offer a satisfactory solution for any case.

The steel work is rigid and inflexible in outline, shape and detail. Every mechanic on the work, from carpenter to mechanical engineer, will take his limitations from the dimensions of this work. It is expensive to buy and more expensive to change. It must do all work required of it without sign of fatigue and do it with the least amount of material. The steel plans should be developed so far that all clearances, locations, dimensions, size of members, connections of principal members and all other data that will be useful to the various trades incorporated in the work will have been clearly and positively fixed once for all. Otherwise, trades will be held back waiting for data to begin their work and ultimately necessitate changes in the erected material. If these points are not anticipated and provided for in the original contract it will have to be done later in an expensive manner and as an "extra."

Excessive vibration in buildings, from the action of overhead moving loads, is more frequently the result of poor design than of insufficient material. When broken glass and leaks are seen that are produced by rattling vibration it will be found that the loads are eccentrically placed and the serious results are caused by unnecessary bending stresses rather than by direct loads. Knee braces under crane girders are to be condemned on this account. The downward deflection of a crane girder will produce stress in the knee brace directly under it; this stress will pass through the post and into the next knee which will act upon the adjoining girder in an upward direction. As the load moves on this adjoining girder these stresses will be quickly and violently reversed, causing furious vibrations, of more or less severity, from end to end of the structure.

Cost of Maintenance.

Cost of maintenance is another important item to consider and embraces a comparison of the cost and advantages of using various structural material. Insurance risk should be looked after and the opinion of local underwriters compared with the cost of adopting them; or the advisability of owners taking their own risk. Legal papers to bind the transactions, records, approval of costs and supervision will properly fall in line under a good asssociation. When this is done a man will know exactly what he wants to buy. Then he wants prices and wants to know that the prices are right.

It is common practice for even prominent managers to look upon buildings as merely a protecting agent for the machines. Once the size is fixed, any steel contractor will design the steel free of charge; in fact, many of them will fall over each other soliciting an opportunity to do it for nothing. But let us examine this a little. A steel contractor makes a business of selling steel. Every steel design costs money and has to be paid for by somebody. Steel men make many more designs than they get contracts for and yet drafting room costs must be charged up to each contract. This cost would not be evident in the aggregate sum, but a man would be very lucky if he paid only for his own design and not for many others as well. If he thinks a minute he will see that even if he receives a dozen bids in this way, there is no real competition at all, for each is bidding on a different thing. It is very difficult for him to judge them for they give him little data upon which to judge.

A conscientious competitor who figures on giving an owner all that he should have would not likely be the lowest bidder, while the one who figures on "skinning the weight" or can arrange to run in some of it as an "extra" can well afford to. A steel contractor, too, while in the heat of competition, will not be likely to make a thorough study of an owner's conditions; his interest is in the price of steel and his prospects are remote.

Such a method is clearly a challenge to all tricky talent in the market, and would seem to show that competition by contracting engineers introduces juggling of material and prices and offers a good foundation for manipulation where the engineering costs are obscure and the sole aim and ambition is profit.

An independent association reduces the cost of material to an actual manufacturing basis, by the arrangement of material in definite quantities for everybody to bid on. The cost of such service is represented by money well invested and the entire ambition and impulse is the owner's satisfacton and the record of another brilliant achievement on the engineer's account. The policy of every engineer must be loyalty to his employer, whoever he may be. The best engineering skill is life and profit to a contractor, and why should it not be so to an owner?

The Jones & Laughlin Steel Company.—The annual gathering of sales agents throughout the country of the Jones & Laughlin Steel Company of Pittsburgh was held in that city last week and was a very successful affair from a business and social standpoint. Among the sales agents in attendance were the following: D. N. Barker, Chicago; H. F. Holloway and C. S. Bradley, New York City; F. M. Campbell, Philadelphia; A. B. Marble, Boston; W. M. Kelley, Atlanta, Ga.; W. F. Bonnell, Cleveland; George Kinsey, Cincinnati; George C. Beals, Buffalo; F. H. Holt, Detroit; W. M. Armstrong, St. Louis, and William Best, Jr., San Francisco. These agents arrived in Pittsburgh Monday morning, November 21, that day being given entirely to an inspection of the plants. These include the Soho and Eliza blast furnaces and the American Iron & Steel Works. In the evening a theatre party was given, attended by the agents and officials. Tuesday was devoted entirely to business sessions, at which plans and policies for the coming year were fully discussed. On Tuesday evening the Jones & Laughlin Steel Company tendered the agents and officials a dinner at the Pittsburgh Club, which was an extremely enjoyable affair and which terminated the reunion.

The Continental Can Company.—At a meeting of the new Continental Can Company, recently held in New York, the permanent organization was effected by the election of the following directors; T. G. Cranwell, J. C. Taliaferro, A. B. Larkin, all formerly connected with the American Can Company; F. P. Assman and A. W. Norton. Messrs. Assman and Norton are the sons of F. A. Assman and Edwin Norton, respectively, both former presidents of the American Can Company, who have retired from the can making business. As stated in these columns last week, the company has purchased property in Syracuse, N. Y., and Chicago, Ill., with suitable factory buildings, which will be equipped with modern machinery for the manufacture of packers' cans and similar products, with the expectation of supplying the trade with cans for next season's business. While most of the machinery has been secured there is considerably more required, which will be purchased from Syracuse, where the company has opened offices at Water street and University avenue. T. G. Cranwell is president, A. W. Norton vice-president and F. P. Assman secretary and treasurer.

No. 3 blast furnace of the Carnegie Steel Company, at South Sharon, Pa., was started last week. This is an entirely new stack and is expected to make about 400 tons per day. The company is now operating three blast furnaces at Sharon, with a daily capacity of about 1400 tons. The open hearth plant at South Sharon, containing 12 50-ton furnaces, is again in full operation and the blooming mill was started last week.

The Jones & Laughlin Steel Company, Pittsburgh, has filed a mechanic's lien for $11,700 at Columbus, Ohio, against the South Pittsburgh Iron Works of Claysville, Pa. The lien covers a large office building being erected in Columbus.

Trade Publications.

Gas Engines.—The Sargent complete expansion gas engine, the American rights of which are owned by the Wellman-Seaver-Morgan Company, Cleveland, Ohio, is described in a special booklet recently issued by that company. This engine has several new features and is furnished in sizes of from 100 horse-power up, in single cylinder, tandem and twin tandem styles. The distinguishing features of the engine are that it is a double acting engine, in which the burning charge is expanded practically to atmospheric pressure and the point of cut off varied with the load; the time of ignition advances as the mixture gets weaker and the inflammation slower. The advantages claimed are increased efficiency, more uniform speed and smoother running under early cut offs. The engine is quite as unique in construction as it is in principle of action, and has elicited many favorable comments from recognized authorities in the engineering profession. The description given of the engine and its parts will be found of unusual interest to the advocates of gas engines.

Gas Driven Compressors.—A catalogue from the Blaisdell Machinery Company, Bradford, Pa., is descriptive of gas driven compressors for air or gas. These are of the type which was described in *The Iron Age* of April 14, 1904. The same catalogue contains considerable in detail concerning the Blaisdell gas engine for driving electric generators or for power purposes other than the compressing of air. This engine is distinguished from the usual type of gas engine in that it is double acting and in other respects resembles a steam engine more than do the usual types of gas engine. The catalogue takes up the construction of the engine rather minutely, dealing with the several parts separately. The advantages attending a gas or air compressor direct driven rather than belted are mentioned, which can briefly be summarized as the saving in first cost, floor space, attendance and wear. These compressors are built in capacities of 750 cubic feet per minute up and for pressures of 5 to 500 pounds. For pressures of 90 pounds and lower the compressors are single stage, and for pressures above are preferably the two-stage or twin type.

Filter Presses.—The F. M. Davis Iron Works Company, Denver, Col., is distributing a pamphlet concerning the filter press treatment of gold ore slimes and the leaching of copper ores. It is more in the nature of a treatise than an ordinary catalogue in that it goes comprehensively into the subject of the cyanide and bromo-cyanide process and the treating of finely slimed gold ores. It has considerable to say of the history and development of the filter press cyanidation process, which is growing in favor. Another part of the catalogue is a complete description, with illustrations, of filter presses, followed by a list of sizes and capacities. Another section deals with the treatment of zinc gold slimes by what is known as the clean up process, and describes a filter press specially designed for use in this work. A diagrammatical section of the filter press cyanide mill is given to illustrate this process. The latter part of the book deals with the leaching of siliceous copper ores with sulphuric or sulphurous acids as solvents.

The Akron Chilian Mill, built by the Wellman-Seaver-Morgan Company, Cleveland, Ohio, is described in a catalogue recently issued. The mill is intended for the wet grinding of metalliferous rock. Its distinguishing features are the possibility of adjusting the rollers while the mill is in operation; the arrangement of the principal bearings so that they can readily be examined and repaired; efficient system of lubrication and disposal of waste oil; efficiency in output, water consumption, wear and tear; even distribution of feed and large screen capacity, and substantial construction, combined with easy access for repairs. The catalogue gives a logically arranged and easy reading description of the mill, illustrating the complete machine and parts in its detail which call for special examination.

"The Care and Use of Pneumatic Tools" is the subject of a booklet from the Philadelphia Pneumatic Tool Company, Philadelphia, Pa. As its name indicates, it is one which should be preserved for the useful information which it contains. Instructions given in this booklet are general and apply equally well to any of the various makes of pneumatic tools. The reading matter is divided under subheadings, dealing with pneumatic tools generally, and then with hammers, rammers, yoke riveters and drills in particular.

Machine Tools.—A general catalogue recently printed by Warner & Swasey, Cleveland, Ohio, covers the line of machine tools which this company manufactures. It illustrates and describes a complete line of hollow hexagon turret lathes and screw machines, also turret lathes and other brass working machine tools. The catalogue contains about 60 pages and is exceedingly commendable for its arrangement, artistic "get up" and index. The half-tones are all excellent and the catalogue contains just enough and not too much reading matter to make it truly useful to the man using it.

Gas and Gasoline Engines.—The Dean gas and gasoline engines are described in general catalogue No. 3, from the Dean-Waterman Company, Covington, Ky. These are made in one-cylinder form in sizes of from 2 to 25 horse-power and in two-cylinder form in sizes of from 14 to 50 horse-power. The catalogue contains as a prelude a little concerning gas engines in general which is useful to those who are not over familiar with the subject. Then follows a description of the Dean engine in particular, first treating of its features in the main and then the parts in detail. A profuse use of illustrations in connection with the description is an exceedingly praiseworthy feature. Information in tabular form, relative to the installation of gas engines is a useful insertion, and a rather novel addition is an alphabetical list of the users of gas engines. The same company also issues a leaflet giving a cut of the engine and a few brief words describing it.

NOTES.

The Oil & Waste Saving Machine Company, Rochester, N. Y., is distributing a leaflet descriptive of the Patterson waste machine for reclaiming both oil and waste. This is stated to save 98 per cent. of the oil and all of the waste, leaving the latter in a better and more absorbent condition than when new. It is made in two sizes, one having a capacity of 2 cubic feet and the other a capacity of 8 cubic feet.

The Hyne Motor Company, Plainfield, N. J., on a leaflet recently issued, gives dimensions and description of a three-cylinder two-cycle gas engine, with engravings showing the system of piping and the space occupied by the engine.

The C. & C. Electric Company, 143 Liberty street, New York, has issued bulletin No. 151, showing the C. & C. standard direct current dynamo and motors, type S. Illustrations are given of the various types in which the machine is made, including the open floor style, open ceiling style, open wall style and closed floor style and vertical style. Also of the particular features of construction, such as armature body brush holders, commutators, &c., and an extended description is given of the machine and all of its parts. Tables of dimensions, capacities, &c., are also included.

The Pittsburgh Gauge & Supply Company, Pittsburgh, Pa., is distributing a little folder showing a sectional view of the Pittsburgh vacuum exhaust head, stating its advantages and giving price-list of sizes and main dimensions.

The Chicago Car Seal & Mfg. Company, Chicago, has issued circular No. 12, which shows a full sized automatic seal press. The circular also illustrates various seals and wires made by the company and explains how and for what purpose they are used. The company makes a large variety of lead and wire seals not shown in the circular, as well as milk bottle caps, tin tags, name plates and metal specialties.

The Holtzer-Cabot Electric Company, Boston (Brookline), Mass., has issued bulletin No. 151 and a supplement to No. 152, the first dealing with electric vibrating bells, the second with magneto clocks.

The Hancock Inspirator Company, 85 Liberty street, New York City, has issued a pamphlet describing the Hancock locomotive inspirator, type E, which is the latest form for feeding locomotive boilers. This inspirator is designed so that by the change of nozzles and tubes the machine is capable of delivering various maximum capacities from 2500 to 5000 gallons per hour. The inspirator is, therefore, universally interchangeable. Curves are given showing the limiting temperatures of feed water for various steam pressures and also the maximum and minimum capacities of feed water at various steam pressures for the six different combinations of tubes and nozzles. A sectional view of the inspirator is shown, with all parts numbered to correspond with a price-list of parts.

The McConnell Wheel & Mine Supply Company, Uniontown, Pa., distributes a circular showing a mine car wheel with cylindrical chilled hub, which it claims will outwear the ordinary car wheels that revolve on axles. These are made in all sizes from 12 to 20 inches in diameter.

The outlook in New Castle and Sharon, Pa., is very good for a busy winter. The Sharon tin plate mills are reported as likely to resume in the near future. The New Castle plants of the Carnegie Steel Company are reported to be in line for additions and improvements. There are very few men idle in these cities who wish for work.

The S. A. Woods Machine Company, Boston, Mass, through R. B. Dunsmore, its Western manager, 1207 Merchants' Loan & Trust Building, Chicago, Ill., has secured a good machinery order for the new planing mill to be erected by the Trout Creek Lumber Company, Jena, La. This consists of a complete outfit, comprising 1 30 x 6 inch four-sided planer and matcher, 2 15 x 6 inch planers and matchers, 4 8 x 6 inch planers and matchers, 2 15 x 6 inch heavy inside molders, 2 8 x 4 inch heavy outside molders, 1 30-inch knife grinder, 8 cut off saws and 2 24-inch gang ripping machines. The planing mill will also be equipped with 2 Sturtevant blowers.

An innovation in chimneys is a concrete stack recently erected in Cincinnati. It is 160 feet high, and has a foundation 30 feet square at the base. The chimney proper is 7 feet in diameter at the point where the intake enters and 6 feet in diameter at the top. There is an outer wall, with an air space of 6 inches all around between it and the inside core.

The Citizens' Industrial Association of America.

About 400 advocates of the open shop, of whom 224 were accredited members of the Citizens' Industrial Association of America, met at the Hotel Astor, New York, on Tuesday morning, November 29, and opened the annual convention of that organization. David M. Parry, president of the association, in his opening address made a strong plea for the open shop, telling his hearers of the growth of socialism in the ranks of the labor unions and warning them by stating that the labor movement as at present conducted is a menace to American government and our industrial development. In the course of his remarks Mr. Parry said:

If trade unionism should become dominant in this country I have not the least doubt that our industries would languish and our streets would be filled with idle men. No other results could possibly come from a system that would base the reward of labor, not on merit, but on the power of organization to dictate terms, a system that would restrict output, discourage enterprise and permit the indolent and least efficient to set the pace for industry.

I believe that fully 1000 manufacturing establishments have in the last year abandoned the closed shop and thrown their doors open to workmen without regard to their membership or nonmembership in a union. I have been informed of the names of more than 250 concerns in the city of Chicago alone that have done this. Is that not a record for the greatest hotbed of unionism in the country? From all parts of the Central West I have received information of hundreds of other factories being opened to independent workmen. Many concerns in the East have also gone to the open shop, although I must say that the employers' movement is stronger in the Central West than it is here in the East, and that the results show it. The effect of the open shop movement has been particularly beneficial. In some factories the output per man has been increased from 25 to 50 per cent.

One of the most gratifying results of the employers' movement has been the remarkable change it has wrought in public opinion. In many parts of the country several years ago the employer was forced to surrender to all kinds of demands from the walking delegates or else incur the obloquy of the community. Not so now. He finds he receives a ready hearing, and if he is in the right he has but little trouble in obtaining the moral support of the public.

J. W. Van Cleave, president of the Citizens' Industrial Association of St. Louis, followed Mr. Parry and said in part:

The principles for which the Citizens' Industrial Association stands are thoroughly American principles, and if carried to the people of the United States and presented to them in an intelligent and proper way those people will act in accord with those principles and prevent a struggle unsurpassed in the history of the world.

We have tried pacific methods and they have failed. We have tried arbitration and its verdicts are ignored and scorned. We have tried contracts with trade unionism, each one of which is criminal under the civil and criminal laws of the land. We have made ourselves parties to crime in order to pacificate ignorance, in order to satisfy greed, in order to satiate grafting, in order to maintain temporary peace.

I now declare that I believe the only salvation for industrial conditions in this country to be conducted with safety, security and horse sense is an equipment sufficiently strong to punish crime of any character wherever it appears.

A. C. Marshall, secretary of the Citizens' Industrial Association of Dayton, Ohio, told in detail the history of the organization of that association.

Charles N. Chadwick of the Brooklyn Manufacturers' Association followed, reading a paper on the future of the American apprentice, in which he said: "The unions are crowding out the apprentices by restricting their number and cramping enterprise. The open shop prevented this, and it was not only for the Citizens' Industrial Association, but the public and the Federation of Labor to take up the responsibility so that the American apprentice might be a valuable American citizen."

The struggle for liberty among the employers at Battle Creek, Mich., was described by Charles W. Post, president of the American Advertisers' Association.

P. C. Nunemacher, president of the Louisville Master Printers' Association, read a paper on the "Liberty of the Press," in which he described the power and strength of the International Typographical Union, which has made a demand for the eight-hour workday, to go into effect in book and job offices throughout the country on January 1, 1906. He said: "The working day is now nine hours. If this demand is granted it will affect you all, and every manufacturer and employer in the city will have to pay higher prices. If it is refused all magazine, book and job printing through the land will be stopped. This is up to you as well as the employing printers. In the meantime the agents of the International Union are organizing the men in all the smaller towns, to make their fight national."

J. C. Craig, president of the Citizens' Alliance of Denver, Col., read an admirable paper defining the work of that organization, and then delivered a speech in defense of the action of Governor Peabody of Colorado in sending troops to the mining regions during the recent disturbances.

Among the other speakers were Daniel Davenport, executive agent American Anti-Boycott Association, Bridgeport, Conn.; Wallace Downey, president New York Metal Trades Association, New York; Frederick W. Job, secretary Employers' Association, Chicago; John Kirby, Jr., Dayton; Frederick E. Matson, secretary Employers' Association, Indianapolis, and James A. Emery, San Francisco.

Central American Notes.

PUERTO CORTEZ, C. A., November 19, 1904.—At Puerto Barrios, Livingston and this port (Puerto Cortez) the recent hurricanes have forced the authorities to think seriously of supplanting modern wharves with iron and steel piers. The pier at Puerto Barrios, built about ten years back, is sadly in need of repairs. At one time when the harbor was dredged properly, vessels and steamers of 3000 tons could easily tie up at this pier, where shipments of mahogany, rosewood, bananas and coffee have always been important. At Livingston, which stands as a gate to the Polochic River, all the interior commerce of the northeast must pass. Small steamers ply up the river to Panzos, where a short line of railway brings down coffee and other produce in exchange for machinery, groceries, corrugated iron and cotton goods from the United States and Europe, mainly Germany.

At Puerto Cortez the repairs on the railroad, lately damaged and partly washed away by the cyclone, are going ahead, though much of the traffic with the interior is still very irregular. President Bonilla of Honduras is to send an envoy to Washington and New York, who will probably be empowered to sell the railroad line and the concession across the country, thus connecting Puerto Cortez on the Atlantic and Amapala on the Pacific Ocean.

At Panama, and in fact all over the Isthmus, they are anxiously awaiting the arrival of Secretary Taft, for everything between the United States representatives and the Panama Government seems to have got into a muddle. They expect that as soon as Secretary Taft has investigated thoroughly, work will begin on the Canal in earnest. C.

The American Sheet & Tin Plate Company has issued orders to start up the Struthers Works at Struthers, Ohio, which has been idle for some months. The plant contains six hot and four cold mills, the annual capacity being 17,500 net tons of black and galvanized sheets.

The new coke plant of the Colonial Coal & Coke Company, near Ligonier, Pa., on the main line of the Pennsylvania Railroad, was started November 29 with 50 coke ovens. More are being built. Samuel Garrison is president; A. Rasner, vice-president; A. H. Schewe, treasurer, and H. B. Schewe, secretary.

The great Lorain plant of the National Tube Company has already made tubes. It is expected that the new mill will be in operation in January and that relief will then be afforded to the McKeesport plant to make needed betterments.

Randolph Bolling of Richmond, Va., blast furnace engineering expert, has accepted a position in the furnace department of the Bon Air Coal & Iron Company at its Tennessee Works, Allens Creek, Wayne County, Tenn.

MANUFACTURING.

Iron and Steel.

At the South Sharon works of the Carnegie Steel Company, at South Sharon, Pa., gas from the by-product coke plant has been connected with one of the open hearth furnaces for the purpose of utilizing it in the place of producer and natural gas. If the experiment proves successful all of the other furnaces will be connected, as well as the heating furnaces and soaking pits. The by-product plant, in addition to supplying its own boilers with gas, has a surplus of about 3,000,000 cubic feet per day, and this can be utilized to good advantage in the operation of the steel plant. During the first half of November the nine furnaces in operation produced 13,450 tons of steel, one furnace producing 1850 tons in 14 days, while another produced 1844 tons in 13 days. The erection of a mixer at this plant is contemplated, as the iron from the three blast furnaces is used in the open hearth department.

Work on the erection of three additional Talbot open hearth furnaces is progressing favorably at the South Side plant of the Jones & Laughlin Steel Company, Pittsburgh. These three furnaces will be of the same capacity as No. 1 and will be available in about four months. One of the furnaces will be ready to operate about February 1, the work on the other two not being so far advanced. These four Talbot furnaces will have a daily capacity of 1000 tons.

We can state officially that the report that the Republic Iron & Steel Company had placed a contract for the building of a rod mill at the Bessemer plant at Youngstown, Ohio, is untrue. The only new mill under erection by the Republic Company at the Youngstown plant is the interchangeable mill, on which sheet and tin bars or rails can be rolled. This mill is being built mainly by the United Engineering & Foundry Company, Pittsburgh, but will not be ready for operation for four or five months.

During the past year the Reading Iron Company, Reading, Pa., has practically rebuilt its plant and equipped it with new and modern machinery. Among the improvements which have been noted from time to time is the new threading department, which is now finished, and which is said to be one of the most complete of its kind in the country, the machinery being operated by electric motors. The company is erecting a four-story brick building, in which to store its patterns, and within the next year a foundry and erecting shop will be built in connection with the Scott works.

The plant of the Zanesville Iron Company, Zanesville, Ohio, was sold by auction November 26 to M. Schonberg of Newark, Ohio, for $24,005. It is probable that the works will be placed in operation. An interesting feature of the sale developed when the bids on scrap material were opened. The following prices were offered: Cast borings, $9; wrought turnings, $11.50; light sheet scrap, $12,50; busheling scrap and scrap bar, $19; material to be loaded by the purchaser.

The Buffalo Union Terminal Railroad Company has been incorporated with a capital of $100,000 to construct 7 miles of trackage within the precincts of the Buffalo Union Furnace Company's plant at the foot of Hamburg street, Buffalo, the present trackage on the company's grounds being inadequate. It is probable that the new terminal railway company will hold relatively the same position to the Buffalo Union Furnace Company that the South Buffalo Railway Company holds to the Lackawanna Steel Company.

The Worth Brothers Company, Coatesville, Pa., is laying out lines for increasing the capacity of its tube works, but as yet very little active work has been done in that direction. It is likely, however, that the company will promptly proceed with the erection of at least one furnace with the idea of keeping it in reserve to operate while one of the present furnaces may be undergoing repairs or rebuilding, thus enabling the maintenance of a uniform output right along.

The Indiana Wire & Nail Works, Muncie, Ind., on which $25,000 has been spent for improvements, resumed operations on Monday.

Niles Furnace of the Carnegie Steel Company, at Niles, Ohio, which has been idle for some months, was put in blast this week. This furnace is 18 x 76 feet and has a daily capacity of about 275 tons. The metal is used in the Ohio Works at Youngstown.

Ten of the 20 hot mills in the Sharon works of the American Sheet & Tin Plate Company, at Sharon, Pa., will be started this week. Other hot mills in this plant are expected to be put in operation next week.

The South works of the Illinois Steel Company, at South Chicago, are closed down and the statement is made that they will remain closed until about January 1. When the works reopen it will be on a lower wage scale than has prevailed during the last six months, as it is the intention of the company to cut down the wages and possibly lengthen the hours of the high priced men, as was done with its plant at Joliet last July. The gradual adoption of improved machinery has so increased the tonnage that men who were paid by tonnage are now receiving exceptionally high wages for an eight-hour day, and it is this class of labor that will be reduced.

The International Harvester Company's bar mill at South Deering, Chicago, has closed for repairs. It is expected that the plant will reopen about the middle of December.

Jacob S. Coxey of Mount Vernon, Ohio, has filed a petition in bankruptcy in the United States Court. His liabilities are given as $287,000. His assets consist of 2500 shares of stock in the Coxey Steel & Silica Sand Company and an unsecured note for $11,000. That company is now in the hands of a receiver.

General Machinery.

The machine shop of the Lloyd Booth plant of the United Engineering & Foundry Company, Youngstown, Ohio, is being extended 30 feet.

The firm of Smith & Carpenter, machinists and die makers, Peoria, Ill., has dissolved, W. H. Carpenter leaving the business. Mr. Smith has organized a new firm to conduct a similar business under the name of E. M. Smith & Co.

The Norfolk & Western Railroad is receiving bids for the construction of a machine shop, 52 x 98 feet, with boiler room annex, 35 x 63 feet, at West Roanoke, Va., which will be equipped with such tools only as are necessary for the running repairs of locomotives running in and out of the divisional terminal. The new shop is a permanent building, to take the place of a temporary machine shop formerly used at that point and does not represent any material increase in the road's present shop facilities.

The Washburn shops of the Worcester Polytechnic Institute, Worcester, Mass., has important orders for machinery from Brussels, Belgium, and a cable order for 12 drill presses from London, this latter order being a duplicate of one shipped to the same firm a few months ago. The shops have gone on full time, following a 50 hours a week schedule.

Machinery for the manufacture of elevator buckets, steel barrels, shop racks, steel carrying trucks, &c., is required by the Avery-Caldwell Mfg. Company, Bellaire, Ohio. The drawings for the machines will be completed within a few days, and purchases will be made at the earliest possible moment. The company, which is a consolidation of the W. G. Avery Mfg. Company, Cleveland, and the Caldwell-Peterson Company of Wheeling, W. Va., has purchased the former plant of the Century Glass Company at Bellaire, containing 96,000 square feet of floor space, and has 100 men employed, remodeling the plant, putting in the foundations for the machinery, &c. There are now 14 cars of machinery on the tracks awaiting installation in the newly acquired buildings. The company is organized with a capital stock of $300,000, divided equally into 7 per cent. preferred and common stock, and has a paid in capital of $170,000. The product is elevator buckets, steel roofing, steel ceilings, steel shop hooks, and other sheet steel merchandise. W. G. Avery is president; C. J. Colling, vice-president; Anson C. Lamb, treasurer; J. Brent Harding, secretary, and S. E. Nold, assistant secretary.

It is not yet known just what new machinery will be required by the Livingston Mfg. Company, Rockland, Maine, which has purchased additional property on which will be erected a building 72 feet square, to be used for forge and machine shop purposes. The machines will be operated by electric motors.

The Fairmount Machine Company, Philadelphia, Pa., has sold its entire business to the D. A. Tompkins Company, Charlotte, N. C., which company will then manufacture the looms, textile machinery, power transmission machinery and elevators which have been built up to this time at Philadelphia. To provide facilities for the production of the additional lines the Tompkins company is erecting a two-story building, 75 x 150 feet, which will be equipped as a machine shop. A portion of the real estate of the Fairmount company has been leased to another concern and a new building is to be erected and other repairs made to suit the lessee, who takes possession January 1.

The report of J. J. Sullivan, receiver for the Aultman Company, Canton, Ohio, which recently failed, has been filed in the United States District Court at Cleveland. It shows the total appraised assets of the company to be $1,644,070; total direct liabilities, $890,003; contingent liabilities of indorsements of jobbers' notes amount to $2,483,902; contingent liabilities as indorsers for the Arctic Machine Company, together with miscellaneous trade paper, $3,770,426.

The Pennsylvania Railroad has placed its mechanical and clerical forces on full time, restoring to duty the remainder of more than 10,000 employees who were laid off by the company under a retrenchment order issued last July.

J. B. Ellis has purchased the Union Iron Works, Selma, Ala., and will continue it in operation. It is not yet known what he will want in the way of new machinery.

The Brown Hoisting Machine Company, Cleveland, Ohio, is erecting an equipment of fuel handling machinery to be installed near Havana, Cuba, for the Havana Coal Company.

Ravenna, Ohio, has secured the location of the plant of T. W. Kneeland of Rochester, N. Y., manufacturer of the Fourdrinier cylinder paper machine, and the equipment is to be set up in the buildings formerly occupied by the American Foundry & Machine Company at Ravenna.

Stockholders of the Toledo Construction & Supply Company, Toledo, Ohio, will vote this week on a proposition to increase the capital stock of the company to $300,000 for the purpose of erecting a large plant in Toledo with which to manufacture a portable asphalt paving machine, which heretofore has been manufactured under contract for the company.

Power Plant Equipment.

The Pan-American Bridge Company, New Castle, Ind., has been awarded the contract to build a steel bridge at St. Joseph, Mich., to cost $20,000.

The sale of the Parkhurst Compound Steam Boiler Company's plant at Oswego, N. Y., has been postponed from November 18 to December 22, as the bids received were not considered satisfactory by the receiver.

The Niagara, Lockport & Ontario Canal Company, which is to construct a large power plant at Lockport, N. Y., has increased its capital stock from $1000 to $10,000,000.

The Merrill Paper Mfg. Company, Merrill, Wis., is in the market for a 200 horse-power Corliss engine, either new or second-hand.

The Van Dorn & Elliott Electric Company, Cleveland, Ohio, has recently added to its equipment and is now prepared to do electrical repair work and rebuilding of electrical machinery for lighting plants, isolated power plants, as well as electric railway repair work, which has been its specialty heretofore.

V. J. Drayer of Dayton, Ohio, representing the promoters of the interurban line between Wabash and Warsaw, Ind., offers to locate the power house at North Manchester, Ind., for a subsidy of $10,000.

James Leffel & Co., Springfield, Ohio, manufacturers of water wheels, steam engines, &c., have placed a contract with the Garry Iron & Steel Company of Cleveland for the structural work for a new factory addition, one story high, 56 x 216 feet. A contract for an electric traveling crane to be installed in the shop has also been let.

The trustees of the Newburg State Hospital, at Cleveland, Ohio, have approved plans for the erection of a power plant, to include boiler, engine, generator and switchboard, to be installed at the hospital. Bids will be advertised for immediately.

At its Detroit, Mich., plant, the American Shipbuilding Company is pushing the work of constructing the engines and boilers for nine large lake steamers which the company has under contract for next year's delivery. The largest engine of the lot is a 3000 horse-power machine for a new passenger boat building in Cleveland, while the others will average about 2000 horse-power.

Fires.

The machine shops and engine houses of the Renicke Coal Mining Company at Madisonville, Ky., were recently destroyed by fire.

The foundry of Bell & Fyfe, Brooklyn, N. Y., was damaged by fire to the extent of $7000 last week.

The shops of the St. Louis & San Francisco Railroad Company in South Memphis, Tenn., were partially burned by fire on November 25. The loss is placed at $50,000.

The wire work manufacturing plant of Jackson & Cook, Philadelphia, Pa., was recently damaged $10,000 by fire.

The plant of the Pelham Mechanical & Foundry Company, Pelham, Ga., was recently burned.

The Decatur Malleable Iron Works, Decatur, Ill., was recently destroyed by fire. The loss is about $25,000.

The plant of the American Veneer Company, near Wells River, Vt., was destroyed by fire November 27, with a loss of $30,000. The plant was erected two years ago.

The plant of the Day-Ward Company, Warren, Ohio, manufacturer of metal bathtubs, &c., was badly damaged by fire last week, entailing a loss of between $15,000 and $20,000.

Bridges and Buildings.

The Indiana Bridge Works, Muncie, Ind., will be enlarged at a cost of about $60,000. Charles M. Kimbrough is president of the company.

George S. Ryder & Co., Cleveland, Ohio, engineers, are placing contracts for a factory building, 60 x 116 feet and four stories high, to be erected on St. Clair street and the Pennsylvania Railway tracks, for the W. S. Tyler Company. The contract for the iron and steel work has been awarded to the Forest City Steel & Iron Company, Cleveland, which has also been awarded a contract for the structural work for a warehouse building for the Cleveland Hardware Company.

Hardware.

The Empire Mfg. Company, Hartford, Conn., has been incorporated under Connecticut laws to manufacture toys and game boards. The company will take about 4000 square feet of floor space for its factory. The officers are: F. S. Chester, president, and L. S. Lewis, treasurer.

The demand for the Ball-Mason fruit jar, which Ball Brothers Glass Mfg. Company, Muncie, Ind., has been making for the past 20 years, has increased so steadily and to such an extent that the company's present plant has proven inadequate. It was therefore necessary to enlarge the facilities for making this particular brand. Instead of enlarging the plant at Muncie the company deemed it best to secure additional production by the purchase of plants at other points, and has just closed the purchase of the Marion Fruit Jar & Bottle Company, with plants at Marion, Ind., and Coffeyville, Kan.; the Loogootee Glass Company, Loogootee, Ind., and Port Glass Works, Belleville, Ill. This purchase gives the company ample capacity and puts it in position to take care of any heavy increase in trade which may occur for several years. The plants, located as they are at different points, will enable the company to distribute its product more satisfactorily than heretofore. The company not only makes shipments all over the United States, but also does considerable foreign business.

The Hamden Mfg. Company, successor to W. A. Ives & Co., Hamden, Conn., states that not in years has its books been so full of orders as at present, its output having been sold up to March 1 next. The company has just installed an electric plant for lighting the factory, which has never before been lighted at night during the 95 years of its existence. Extra help is being engaged to increase the output, and the working day has been lengthened.

The Vandegrift Wrench Company, Shelbyville, Ind., whose plant was recently destroyed by fire, has decided to rebuild.

The Tippecanoe Smokeless Powder Company has been incorporated at Monticello, Ind., with $100,000 capital stock, by James Mitchell, J. Frank Bending and George F. Palmer.

The United States Hardware Mfg. Company of Cleveland, Ohio, which is erecting a large plant at Port Clinton, Ohio, announces that it has acquired the business, plant, machinery, tools, patents, &c., of the Standard Steel Tube Company of Toledo, Ohio, and that the plant and business will be removed to Port Clinton, where additional buildings will be erected. The Toledo company manufactures bicycles, tubing, automobile tubing, carriage gears, wagon whiffletrees, single and double trees, neck yokes and numerous other articles that can be made from tubing. Under the new arrangement a specialty will also be made of tubular steel harness hames. The company will have its own brass and iron foundries, which will give it an advantage with the line of carriage and harness specialties which it proposes to make.

Mayer & Co., Philadelphia, Pa., manufacturers of Gold Medal files, have recently made several additions to their plant. A large storehouse has been built to better accommodate the storage of finished goods, and a number of other changes in the plant have been made. These improvements will greatly increase their production of files. Inquiries are said by Mayer & Co. to have materially increased, and there has been quite a gain in the volume of business transacted.

Miscellaneous.

The National Electrolytic Company, Buffalo, N. Y., has purchased the plant and business of the Vermillion Chemical Company, at Niagara Falls, N. Y., for $600,000, and will continue the manufacture of electro-chemical products, adding largely to the products turned out.

The L. M. Ericsson Telephone Company, Tonawanda, N. Y., recently incorporated, has purchased a 12-acre tract of land in the northern outskirts of Buffalo, with railroad connections, and will at once build an extensive factory on the site, where it will manufacture all kinds of telephonic apparatus.

The Pynchon Land & Construction Company, Thompsonville, Conn., has passed into the hands of a new syndicate, which proposes to erect a gas plant in the town to produce gas for domestic and commercial purposes. Land for the plant has been acquired on the bank of the Connecticut River.

The Massachusetts Fuel Saving Radiator Company, Foxboro, Mass., has been incorporated under Massachusetts laws to manufacture the Crocker waste heat radiator, a device for utilizing the heat that goes up the chimney. This company has territorial rights for the counties of southeastern Massachusetts. The officers are John Weber, president, and Edward B. Swift, treasurer.

Thomas G. Plant, Jamaica Plain, Mass., is building a six-story addition, 52 x 175 feet, to his shoe factory.

The Norcross Bros. Company, Worcester, Mass., is to erect a new granite cutting shop, 40 x 100 feet, for the use of one of its constituent companies, the Troy White Granite Company. This increase is necessary because of the demand for material due to new contracts.

The Corbin Motor Vehicle Company, New Britain, Conn., will occupy the buildings formerly owned by the New Britain Knitting Company and recently purchased by the American Hardware Corporation. The new quarters will considerably enlarge the Motor Vehicle Company's manufacturing facilities.

We are officially advised that the report that the Union Switch & Signal Company had entered orders this month for $800,000 worth of signal equipment is untrue. It is stated the report was probably started for stock jobbing purposes.

The Lorain Shipbuilding Company intends to double the capacity of its shipbuilding plant at Lorain, Ohio, having bought 22 acres of ground for that purpose. It is also intended to dismantle the shipbuilding works at Bay City, Mich., and remove the plant to Lorain.

The Magnetic Control Company has been incorporated with $1,000,000 capital stock by interests connected with the Marine

Magnetic Controller Company, 108 Fulton street, New York. Daniel Bacon is manager of the latter company.

The Pearson Boat Construction Company, Duluth, Minn., builder of gasoline launches, engines and small boats, is negotiating for a new site upon which to rebuild its plant, which was recently destroyed by fire.

The Coffin Valve Company, Neponset, Mass., is erecting a two-story addition, 90 feet square, which will be used for increasing the general manufacturing space.

The Keasey Pulley Company, Toledo, Ohio, whose plant was entirely destroyed by fire on November 9, will at once equip an entire new plant for the production of the well known Keasey wood split pulleys.

The Marion Motor-Car Company has been incorporated at Indianapolis with a capital stock of $100,000. The incorporators are L. C. Boyd, Robert H. Hassler and Charles A. Bookwalter.

The National Elastic Pulp Company is to erect a plant at Bridgeport, Conn., at the West End. The main structure will be of mill construction, 64 x 117 feet, and three stories.

Armfield & Cartwright, who recently put in operation a $50,000 stone crushing plant at Ridgeville, Ind., will build a similar one at Portland, Ind.

The Norstrom Lockout Telephone Company has been incorporated at Muncie, Ind., with $600,000 capital, to manufacture telephones and particularly the Lockout telephone, a recent patent. The plant will be located in that city. The directors are John Martin, Chicago; George W. Beers, Ft. Wayne; Abbot L. Johnson, George A. Ball and J. H. Smith, Muncie.

The Bosworth-Holding Company, Cleveland, Ohio, has just completed arrangements with the Jenny Electrical Mfg. Company of Indianapolis to act as its agent. The company will carry stock of the Jenny company's goods, enabling it to make manufacturers' prices on same.

The H. C. Frick Coke Company, Pittsburgh, is starting up more coke ovens in the Connellsville region and also in the Masontown fields. The greater part of the output of the Frick Coke Company is furnace coke, which is used in blast furnaces of constituent interests of the United States Steel Corporation. A small tonnage of foundry coke is also marketed.

Alden Sampson, Pittsfield, Mass., has bought the mill property of T. L. Pomeroy and will erect a small factory on the site, to which he will transfer his automobile business.

The J. R. Griffiths Mfg. Company, Chicago, has filed articles of incorporation. The company will manufacture steam and gas fitters' supplies. The incorporators are J. R. Griffiths, J. F. Lawrence and Charles Ritchie.

The George W. Peter Implement Company, St. Louis, Mo., has increased its capital stock from $100,000 to $200,000. The added stock will be used in extending the line of the company's manufacture.

C. A. Davis, Somerset, Mass., has acquired land on Natt's Point, Stonington, Mass., and will establish a shipyard on the property. He will build two light draft schooners for the lumber trade as a beginning.

The National Spiral Fire Escape Company, Amherst, Mass., has been incorporated in Massachusetts, with authorized capital stock of $500,000, to manufacture a patent fire escape. No plant will be established, the work being done by outside parties. The incorporators are Dwight W. Palmer, Edwin D. Marsh, James F. Page and Robert P. Esty, Amherst, and Duane H. Nash, New York.

The Manganese Steel Safe Company, Plainfield, N. J., is building an extension to its plant. The machinery requirements will be small.

The Canada Brass Rolling Mills, Limited, Toronto, Canada, has completed the equipment of its new plant, and is now ready to roll copper, brass and silver sheets. Later the manufacture of rod, wire and tubing will be taken up. The rolling mill machinery was built by the Waterbury Farrel Foundry & Machine Company, Waterbury, Conn. Jno. R. Barber is president; R. E. Menzie, managing director, and Ferdinand Deming, who has been identified with the brass industry of the United States for many years, is superintendent.

Lewis A. Coleman has been appointed receiver for the Hussey Mower Company, with headquarters at Indianapolis, Ind., and works at Knightstown.

Jewett & Co., Buffalo, N. Y., manufacturers of stoves and ranges, have purchased the large plant of the American Cabinet Company at North Buffalo, on the line of the Niagara Falls Branch of the New York Central, and will fit it up for the manufacture of their products, making extensive additions to the plant.

The Randall-Tylee Mfg. Company has been incorporated at Newark, N. Y., to manufacture metal specialties. Capital, $100,000. Incorporators: Robt. F. Randall, Caleb L. B. Tylee and Ray B. Randall of Newark, Wayne County, N. Y.

The Pressed Steel Car Company, Pittsburgh, has received an order from the Union Pacific Railway for 750 steel cars, and the same railroad has placed a contract with the American Car & Foundry Company for 2450 wooden cars.

The Muncie Gas Light & Fuel Company, Muncie, Ind., will build an artificial gas plant to cost $100,000. Robert Adams, Indianapolis, is president.

The Auto Grand Piano Company has been incorporated at New Castle, Ind., with a capital stock of $250,000, by Matthew Sinclair, Albert Krell and Edwin B. Pfau. The company will manufacture an automatic piano player, for the production of which the plant of the Krell-French Piano Company of New Castle will be largely increased.

A. E. Olson of Toledo, Ohio, who has invented a bicycle saddle spring, will incorporate a company with $20,000 to manufacture the device.

The Perry-Payne Company, Cleveland, Ohio, is having plans prepared by Knox & Elliott for a building 200 x 500 feet, to be constructed of brick, steel, cement and wire glass, to be occupied by several manufacturers of and dealers in automobiles.

Dr. L. J. Eger and Wm. Eusien, Delphos, Ohio, have formed a partnership for the manufacture of concrete building blocks. They will install a plant at Delphos and will make columns, caps, trimmings and blocks.

The Osborn Engineering Company, Cleveland, Ohio, acting under the direction of City Engineer Payne of Akron, Ohio, is preparing plans for the erection of a large steel viaduct at Exchange street, Akron.

The Marion & Eastern Traction Company has been organized and incorporated at Marion, Ind., to build an electric interurban railway from Marion to Van Wert, Ohio. The company is composed of G. A. H. Shideler, R. E. Breed and W. B. Dodds, Marion, Ind.; Jilson J. Coleman, formerly of New Jersey, president of the Northern Traction Company, now of Marion: George Breed, Philadelphia, and Harrison Williams of Philadelphia.

The Indianapolis, New Castle & Toledo Electric Railway Company has been incorporated with a capital stock of $3,500,000 by David M. Parry, William E. Stevenson and Robert M. Churchman of Indianapolis, and Chas. S. Hernly and Eugene H. Bundy of New Castle, Ind. The officers of the company are: D. M. Parry, president; Chas. S. Hernly, vice-president and general manager; F. M. Ingler, New Castle, secretary and general counsel; Robert Churchman, Indianapolis, treasurer; Chas. N. Mikels, New Castle, superintendent.

The Central Trust Company, Indianapolis, has been appointed receiver for the Wagner Plow Company of that city, on petition of Alfred Burdsal, vice-president of the company, who says his motive is to save the large plant from its creditors and put the business on a paying basis. The capital stock of the company is $150,000 preferred and common stock, both of which have practically all been sold. It is set out in the petition that the company has abundant assets, but is not able to realize on them promptly, and has not enough ready cash to carry on its business. There is an indebtedness of $23,000.

The Indiana Appellate Court has decided that a court may compel obedience to its decrees when it enjoins strikers from interfering with their employer's business. Three strikers at the Indianapolis Drop Forging Company's factory, Indianapolis, who were serving as pickets had an altercation with a workman who was going home at noon. He filed an affidavit against them for interfering, in violation of the court injunction. Their principal defense was their denial of any intention of contempt of court, and they relied on a section of the statute which says that if a defendant charged with indirect contempt of court shall answer under oath "so as to show that no contempt was intended the court shall acquit and discharge the defendant." But the statute also expressly states, the decision shows, that its provisions do not apply to proceedings "for the enforcement of civil rights and remedies."

Joseph Valentine, president of the International Iron Molders' Union of North America, who is charged with maliciously aiding and abetting in the destruction of property at the Eureka Foundry, Cincinnati, Ohio, where several attempts have been made to dynamite the plant, was arraigned before Judge Lueders in that city on November 28. He waived examination and was bound over to the Grand Jury and his bond fixed at $2000, which was signed by a member of the City Council. It is understood that counsel for Mr. Valentine was ready for trial, but preferred to take the case to the Grand Jury, as the lower court had no final jurisdiction in the matter. Action will no doubt be taken within the next week or so.

The Iron and Metal Trades

The buying in all lines of Finished Iron and Steel continues, Steel Rails, of course, being the exception. It it noted by those who have opportunities for studying the whole field that buying seems to make a run on one branch, for instance Wire, or Tubes or Tin Plates, only to shift quickly to another, which then enjoys a rush of orders. Recently it has been the Sheet trade, and, to a less marked extent, the Structural trade, which has had its turn. We understand that within the next ten days every properly equipped Sheet and Tin Plate plant of the United States Steel Corporation will be in operation.

The puzzling question is to what extent the increased buying recently actually reflects larger consumption. When orders are placed for material to build structures of all kinds, actual consumption is usually closely reflected. But it is different with the raw materials, the semifinished products and the extensive lines of finished staple goods.

The buyers in some branches, notably in the general foundry trade, complain that they have as yet felt but little improvement in tonnage and practically no improvement in prices. Yet really all of them have bought for longer and shorter periods, convinced of the coming of an improvement with them. They cannot be expected to go ahead further until the events have justified what they have only so recently done.

Still, there has been quite some good buying of Pig Iron last week. Cast Iron Pipe interests have purchased upward of 15,000 tons in the West and at least a like quantity in the Eastern markets, with additional tonnage pending. Pittsburgh reports one sale of 30,000 tons of Bessemer Pig and there is again a movement pending in the Eastern Basic Pig market.

It is only in one branch of the Eastern Pig Iron trade that higher prices are not attainable, and that is in Low Phosphorus Pig, which meets the competition of foreign Pig Iron, near tidewater points, at about $19.50 to $20.

The expected Car Equipment orders are being placed and there is talk of considerable further requirements. The Plate mills are generally in good shape, so far as they commit themselves at present prices. The feeling is growing that higher figures may be decreed before the end of the year, both in Plates and in Structural Material, which, too, is sharing in the more liberal movement.

Progress has been made in the settlement of matters in the Rail industry. Allotments have been practically fixed, but some details remain to be worked out. There are still those who urge opening the books at $26, but the drift of opinion is in favor of $28. Where foreign Rails must be met at Gulf or Pacific Coast ports the works cannot well expect to net that figure at mill, in competition with foreign Rails.

It looks now as though the tonnage of the pool for 1904, inclusive of Mexican and Canadian orders, will not reach 1,700,000 tons, or about 1,400,000 for the consumption, exclusive of Colorado and Tennessee, of the home markets.

The exceeding slimness of this year seems to give rise to the expectation that next year will total up 2,250,000 tons for the association mills.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

At date, one week, one month and one year previous.

	Nov. 30, 1904.	Nov. 23, 1904.	Nov. 2, 1904.	Dec. 2, 1903.
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	**$16.50**	$16.25	$15.00	$15.00
Foundry Pig No. 2, Southern, Cincinnati	**15.75**	15.75	14.75	12.00
Foundry Pig No. 2, Local, Chicago	**16.00**	16.00	15.00	14.50
Bessemer Pig, Pittsburgh	**16.35**	15.35	13.85	14.85
Gray Forge, Pittsburgh	**15.85**	14.10	13.10	12.50
Lake Superior Charcoal, Chicago	**17.00**	16.50	16.00	16.50
BILLETS, RAILS, &c.:				
Steel Billets, Pittsburgh	**21.00**	21.00	19.50	23.30
Steel Billets, Philadelphia	**24.50**	24.00	22.00	24.25
Steel Billets, Chicago	**24.00**	24.00	22.50	23.00
Wire Rods, Pittsburgh	**28.00**	27.00	26.00	31.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	**15.00**	15.00	12.50	9.00
O. Steel Rails, Philadelphia	**16.00**	15.75	14.00	11.75
O. Iron Rails, Chicago	**22.00**	22.00	19.50	15.00
O. Iron Rails, Philadelphia	**18.50**	18.50	17.00	16.00
O. Car Wheels, Chicago	**15.50**	15.50	13.50	13.00
O. Car Wheels, Philadelphia	**14.00**	14.00	13.50	12.75
Heavy Steel Scrap, Pittsburgh	**16.00**	14.50	13.50	12.00
Heavy Steel Scrap, Chicago	**14.00**	14.00	11.50	9.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**1.53½**	1.53½	1.43½	1.35
Common Iron Bars, Chicago	**1.55**	1.50	1.40	1.35
Common Iron Bars, Pittsburgh	**1.54½**	1.44½	1.35	1.34¾
Steel Bars, Tidewater	1.44½	1.44½	1.44½	1.44½
Steel Bars, Pittsburgh	1.30	1.30	1.30	1.30
Tank Plates, Tidewater	1.54½	1.54½	1.54½	1.78
Tank Plates, Pittsburgh	1.40	1.40	1.40	1.60
Beams, Tidewater	1.54½	1.54½	1.54½	1.73½
Beams, Pittsburgh	1.40	1.40	1.40	1.60
Angles, Tidewater	1.54½	1.54½	1.54½	1.73½
Angles, Pittsburgh	1.40	1.40	1.40	1.60
Skelp, Grooved Steel, Pittsburgh	**1.40**	1.40	1.35	1.45
Skelp, Sheared Steel, Pittsburgh	**1.50**	1.50	1.40	1.55
Sheets No. 27, Pittsburgh	**2.10**	2.10	2.00	2.30
Barb Wire, f.o.b. Pittsburgh	**2.15**	2.15	2.05	2.50
Wire Nails, f.o.b. Pittsburgh	**1.70**	1.70	1.60	1.90
Cut Nails, mill	**1.70**	1.70	1.60	1.90
METALS:				
Copper, New York	**14.87½**	14.87½	13.62½	12.12½
Spelter, St. Louis	**5.55**	5.55	5.15	4.50
Lead, New York	**4.60**	4.60	4.40	4.10
Lead, St. Louis	**4.40**	4.45	4.20	4.00
Tin, New York	**29.80**	29.00	29.00	25.80
Antimony, Hallett, New York	**9.00**	9.00	7.25	6.25
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	**3.64**	3.64	3.49	3.79

Chicago.

FISCHER BUILDING, November 29, 1904.—(*By Telegraph.*)

The markets both in Pig Iron and in Finished Materials are experiencing a pause in the somewhat sensational advances of the last few weeks. This pause is taken by buyers as an indication of weakness and a forerunner of demoralization before long, but a broader view is that a level has finally been reached which will be maintained without further material advances for some weeks to come. If the level is not too high, it doubtless will be maintained through the dull midwinter months, and if such proves to be the fact higher prices may be expected as the result of the natural spring demand. Neither Northern nor Southern Pig Iron prices are changed, and there is little business being entered, partially because nearly all present and near future requirements were covered earlier in the upward movement and partially because producers as a rule decline to open their books for shipment beyond next March. Exceptions, however, are made to this last rule, but in that case the maximum prices are obtained, with sometimes a premium of 25c. to 50c. a ton. Business is only fairly good in Rails and Track Supplies, Billets, Plates and Structural Steel, but everything considered the outlook is favorable. The advance in Sheets has tended to stimulate buying. Business in Pipe and Boiler Tubes is reported to be excellent. Cast Iron Pipe makers are booking business later than usual at this time of the year for immediate execution. The Scrap market is devoid of the sensational features which have characterized it for some weeks, and while some advances have been made, the tone is much less sanguine than it has been. Some advances are noted in Metals. Coke is firm and unchanged. Wire Goods are moving actively at the higher prices announced on November 16. Nuts, Bolts and kindred lines have been advanced.

Cast Iron Pipe.—Prices are very firm and business is unusually good both for present and future use. Quotations on ordinary lots are based on $27.50 for 4-inch Water Pipe and $26.50 for 6-inch and heavier, with $1 a ton higher for Gas Pipe.

Old Materials.—While some prices have advanced since last week, owing to the continued demand from dealers, the feeling is not nearly as strong as it was a week ago, and there begins to be manifested a feeling of rebellion on the part of consumers against what they term extortionate prices charged by dealers. There is no doubt that there is a very large tonnage of Old Iron and Steel in dealers' yards and that should the market show any decided weakness this tonnage will be thrown upon it with disastrous effect. However, thus far dealers have had the courage of their convictions and have been able to maintain the steadily advancing prices in the face of relatively small consumptive demand. The principal buyers of Scrap offered by producers are dealers, although consumers are also buyers for a considerable tonnage. The Chicago, Milwaukee & St. Paul Railroad sold about 1500 tons of miscellaneous Railroad Scrap, the Chicago & Eastern Illinois about 400 tons and the Chicago & Northwestern will close December 1 a list amounting to about 1150 tons. The prices secured by the St. Paul and the Chicago & Eastern Illinois are 50c. higher on some lines than those secured by the Chicago, Burlington & Quincy last week, though on many lines they were able to secure only last week's prices, and are considered fortunate to be able to get them. The following prices are those prevailing for Chicago delivery, the lower prices named being in general those paid to producers by consumers, while the higher prices are the offering prices of dealers. This, however, is not inflexibly the case. We quote as follows, per gross ton:

Old Iron Rails	$22.00 to $22.50
Old Steel Rails, 4 feet and over	16.00 to 16.50
Old Steel Rails, less than 4 feet	15.00 to 15.50
Heavy Relaying Rails, subject to inspection	22.00 to 22.50
Heavy Relaying Rails, for side tracks	20.00 to 20.50
Old Car Wheels	15.50 to 16.00
Heavy Melting Steel Scrap	14.00 to 14.50
Frogs, Switches and Guards	14.00 to 14.25
Mixed Steel	10.00 to 10.50

The following quotations are per net ton:

Iron Fish Plates	$19.00 to $19.50
Iron Car Axles	22.00 to 22.50
Steel Car Axles	16.50 to 17.00
No. 1 Railroad Wrought	18.00 to 18.50
No. 2 Railroad Wrought	17.00 to 17.50
Shafting	17.50 to 18.00
No. 1 Dealers' Forge	14.00 to 14.50
Wrought Pipes and Flues	13.00 to 13.50
Iron Axle Turnings	12.00 to 12.50
Soft Steel Axle Turnings	12.00 to 12.50
Machine Shop Turnings	11.50 to 12.00
Cast Borings	7.50 to 8.00
Mixed Borings, &c.	7.50 to 8.00
No. 1 Mill	9.50 to 10.00
Country Sheet	8.50 to 9.00
No 1 Boilers, cut to Sheets and Rings	11.50 to 12.00
No 1 Cast Scrap	14.00 to 14.50
Stove Plate and Light Cast Scrap	11.50 to 12.00
Railroad Malleable	12.50 to 13.00
Agricultural Malleable	12.00 to 12.50

(By Mail.)

Pig Iron.—Prices are steady on the high level announced last week, and the only advance that we note is that we quote Lake Superior Charcoal Iron 50c. higher than a week ago. Actual trading in the shape of orders for immediate delivery and specifications on contracts is by no means heavy. Even the Northern producers, whose prices are so much lower than those maintained by Southern furnaces, are booking comparatively light business for delivery between now and next March. It is true that there is still a determined effort evinced on the part of melters to negotiate contracts covering deliveries beyond the first quarter of next year, and the refusal of the furnaces to enter into such contracts is really the strongest feature of the present market situation. There is no doubt that prices on Iron advanced more rapidly than was justified by present business conditions. By this is not meant that business is poor, but that it is naturally dull in midwinter, and the tonnage that will be used between now and March will be normally lighter than that for any other four months period of the year. Old heads in the business who express the wish that the advance might not have occurred until about January entertain fears that it will be difficult for producers to hold the present schedule through the dull months, because they believe that an indication of weakness will be immediately seized by buyers to hammer down prices to a lower level than they should be. They argue that if the advances had occurred in December or January instead of October and November the demand for Iron for spring consumption would have made it an easy matter to maintain prices and even to advance them to a still higher level. At the same time there is no doubt that some Southern Iron is being sold on the basis of $13.50, Birmingham, for No. 2, for delivery this side of next July. The general foundry business is improving nicely, and consumers of Iron in general are finding a healthy betterment in their business. The improved and improving business conditions would have warranted a steady increase in the price of Pig iron, and it may be that consumptive demand will catch up with the present furnace ideas in time to prevent a slump in prices. The following are the prices that are being asked in this market for delivery either the balance of this year or the first quarter of next:

Lake Superior Charcoal	$17.00 to $17.50
Northern Coke Foundry, No. 1	16.50 to 16.75
Northern Coke Foundry, No. 2	16.00 to 16.25
Northern Coke Foundry, No. 3	15.50 to 15.75
Northern Scotch, No. 1	17.00 to 17.25
Ohio Strong Softeners, No. 1	17.80 to 18.30
Ohio Strong Softeners, No. 2	17.30 to 17.80
Southern Silvery, 4 to 6 per cent. Silicon	18.15 to 19.15
Southern Coke, No. 1	.... to 17.65
Southern Coke, No. 2	.... to 17.15
Southern Coke, No. 3	.... to 16.65
Southern Coke, No. 4	.... to 16.40
Southern Coke, No. 1 Soft	.... to 17.65
Southern Coke, No. 2 Soft	.... to 17.15
Southern Gray Forge	.... to 16.15
Southern Mottled and White	.... to 15.90
Malleable Bessemer	16.00 to 16.50
Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon	19.30 to 20.30
Jackson County and Kentucky Silvery, 10 per cent. Silicon	.... to 21.30
Alabama Basic	.... to 17.15
Virginia Basic	16.40 to 16.65

Billets.—A good demand prevails for Forging Billets, and the few buyers of Rolling Billets in this market are also specifying liberally on contracts. Prices are unchanged, as follows: Bessemer Rolling Billets, 16 square inches in section and larger, up to but not including 100 square inches, $24 per gross ton, Chicago; 100 square inches, up to but not including 400 square inches, $26; 400 square inches and larger, $30. Open Hearth Forging Billets are $2 a ton above these prices, as are also Axle Billets and Billets smaller than 16 square inches in section.

Rails and Track Supplies.—Nothing was done at the preliminary meetings among Rail makers last week toward a settlement of the 1905 price on Rails, but there is daily growing less likelihood of a reduction. There is great strength in the Rail situation generally and in Light Rails and Track Supplies in particular. While prices have not actually advanced, they are strong at $28 for Standard Section Rails, and $22 to $24, at mill, for Light Rails. Angle Bars rule at from 1.30c. to 1.35c.; Spikes from 1.65c. to 1.70c.; Track Bolts have advanced, now being quoted at from 2.25c. to 2.30c. with Square Nuts and about 2.40c. with Hexagon Nuts. Store prices on Angle Bars, Track Bolts and Spikes are from 15c. to 20c. above mill prices.

Structural Material.—Specifications on contracts and new business both in the shape of contracts and orders are liberal and encouraging. There is an under current of belief that prices on Structural Shapes will advance somewhere about January 1. Official prices, which will not be quoted on contracts extending beyond shipment the end of next June, are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.56½c., Chicago; Angles, 3 to 6 inches, ¼-inch and heavier, 1.56½c.; Angles, larger than 6 inches on one or both legs, 1.66½c.; Beams, larger than 15 inches, 1.66½c.; Zees, 3 inches and over, 1.56½c.; Tees, 3 inches and over, 1.61½c., with the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Store prices on Structural Materials are 1.80c. to 1.90c. for Angles, Beams, Channels and Zees, base sizes, with 1.90c. to 2c. for 18, 20 and 24 inch Beams; Tees, 1.85c. to 1.95c. These prices are for either random lengths or cut to lengths.

Plates.—There is some let-up in specifications on contracts and on new orders, but business is in a healthy condition, with mills refusing to make contracts for shipment later than June 30 next. As a matter of fact, the conviction is growing that prices will be advanced possibly as early as next January. Association prices are as follows: Tank quality, ¼-inch and heavier, wider than 24 and up to 100 inches wide, carloads, Chicago, 1.56½c.; 3-16 inch, 1.66½c.; Nos. 7 and 8 gauge, 1.71½c.; No. 9, 1.81½c.; Flange quality, any width up to 100 inches, 1.66½c.; Sketch Plates, in Tank quality, 1.66½c.; in Flange quality, 1.76½c. Store prices on Plates are as follows: Tank Plates, up to 100 inches wide, ¼-inch and heavier, 1.80c. to 1.90c.; 3-16-inch up to 72 inches wide, 1.90c. to 2c.; No. 8, up to 60 inches wide, and No. 10, up to 48 inches wide, 1.90c. to 2c.; lower gauges are quoted under the headings of Sheets. Beyond the base widths named extras from 10c. to 25c. per 100 lbs. are charged for wider widths; Flange quality is usually charged at 25c. extra.

Sheets.—The official advances made on Sheets last week were $2 a ton on Black Sheets and $3 a ton on Galvanized. Even these prices are thought to be low in terms of the cost of Sheet Bars and further advances are not at all improbable later on. We quote, Chicago, car lots, on the blue annealed and box annealed Sheets: Nos. 9 and 10, 1.76½c.; Nos. 11 and 12, 1.81½c.; Nos. 13 and 14, 1.86½c.; Nos. 15 and 16, 1.96½c.; Nos. 18 and 20, 2.11½c.; Nos. 22 and 24, 2.16½c.; Nos. 25 and 26, 2.21½c.; No. 27, 2.26½c.; No. 28, 2.36½c.; No. 29, 2.46½c.; No. 30, 2.56½c. Store prices

on Black Sheets are as follows: Nos. 8 and 10, 1.95c. to 2c.; No. 12, 2c. to 2.05c.; No. 14, 2.05c. to 2.10c.; No. 16, 2.10c. to 2.15c.; Nos. 18 and 20, 2.25c. to 2.30c.; Nos. 22 and 24, 2.35c. to 2.40c.; No. 26, 2.45c. to 2.50c.; No. 27, 2.50c. to 2.55c.; No. 28, 2.55c. to 2.60c.; No. 29, 2.65c. to 2.75c. Galvanized Sheets are sold by the American Sheet & Tin Plate Company at net prices instead of on the discount basis. Their net prices in carload lots, f.o.b. Chicago, are as follows: No. 16, 2.51½c.; Nos. 18 and 20, 2.66½c.; Nos. 22 and 24, 2.81½c.; No. 26, 3.01½; No. 27, 3.21½c.; No. 28, 3.41½c. These prices range from 1c. to 3c. higher, except in the case of No. 16, which is 7c. higher, than 80 and 5 per cent. discount at Pittsburgh, plus 16½c. full freight. Store prices on Galvanized range from 70 and 10 to 70, 10 and 5 from list, f.o.b. Chicago warehouse.

Bars.—Iron Bars are being held pretty generally at from 1.55c. to 1.60c., an advance of $1 a ton since last week. Naturally at these high prices Bar Iron mills are securing business only from consumers who believe they cannot use Steel, as Steel Bar and Band prices are maintained on the basis of 1.46½c., base, half extras, Chicago, in carload lots. Soft Steel Hoops are unchanged at 1.55c. rates, full extras, Pittsburgh, or 1.71½c., Chicago, in car lots. Store prices on Iron Bars are 1.75c. to 1.80c., base, full extras. Soft Steel Bars and Bands are unchanged at 1.60c. to 1.70c., base, half extras; Soft Steel Angles, Channels and Tees at 1.75c. to 1.80c., half extras; Soft Steel Hoops, 2c. to 2.10c. rates, full extras.

Merchant Steel.—Business conditions are unchanged since last report, and a good volume of tonnage is being received in the shape of orders and specifications on new contracts. Producers refuse to contract beyond the first of next July. Prices are unchanged, as follows: Bessemer and Open Hearth Spring Steel to general trade, 1.85c. to 1.90c.; Smooth Finished Machinery Steel, 1.71½c. to 1.76½c.; Smooth Finished Tire, 1.66½c. to 1.71½c.; Flat Sleigh Shoe, 1.51½c. to 1.56½c.; Concave and Convex Sleigh Shoe, apparently unchanged at 1.66½c. to 1.71½c.; Cutter Shoe, apparently unchanged at 2.25c. to 2.30c.; Toe Calk Steel, 2.01½c. to 2.06½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c and up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car lots; Railway Spring, carload lots, 1.66c. to 1.71½c., with reduction for larger quantities.

Merchant Pipe.—Business is good, but the phenomenal activity of two or three weeks ago has given place to a normal trading for this time of year. Prices to consumers in car lots for shipment from mill, f.o.b. Chicago, are unchanged, as follows:

	Steel.		Iron.	
	Black. Per cent.	Galv. Per cent.	Black. Per cent.	Galv. Per cent.
⅛ to ¼ inch	67.35	51.35	65.35	49.35
⅜ and ½ inch	71.35	59.35	69.35	57.35
¾ to 6 inches	75.35	65.35	73.85	63.85
7 to 12 inches	70.35	55.35	68.85	53.35
Extra strong, plain ends, ⅛ to ⅜ inch	60.35	48.35	58.35	46.35
½ to 4 inches	67.35	55.35	65.35	53.35
4½ to 8 inches	63.35	51.35	61.35	49.35
Double extra strong, plain ends, ⅛ to 8 inches	56.35	45.35	54.35	43.35

Boiler Tubes.—While a good volume of business is being booked, it is not always at official prices, and there is a good deal of business still being done at the old figures before the $4 advance. Current prices on less than car lots at Chicago for shipment from mill are as follows:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches	44.35	41.35	52.35
1¾ to 2¼ inches	56.35	41.35	40.35
2½ inches	58.35	46.35	43.35
2¾ to 5 inches	64.35	53.35	up to 4 in. 50.85
6 to 13 inches	56.35	41.35	....

Store prices on Boiler Tubes have not advanced, and the following schedule is fairly well maintained:

	Steel.	Iron.	Seamless Steel.
1 to 1¼ inches	42½	37½	40
1⅜ to 2¼ inches	52½	35	37½
2½ inches	55	37½	40
2¾ to 5 inches	62½	47½	47½
6 inches and larger	52½	..	..

Coke.—Coke continues to show strength, but there has been no actual advance since last week, when we quoted $2.50, at ovens, or $5.15, Chicago, as the minimum price for strictly 72-hour Connellsville Foundry Coke. Virginia and West Virginia Cokes are being held at from $2.10 to $2.25, at the ovens, which would be $4.75 to $4.90, Chicago. Wise County, Va., Cokes are offered at from $2.25 to $2.50, at ovens, or $4.50 to $4.75, Chicago. Milwaukee Solvay Foundry Coke is quoted at $5.25 for spot shipment, and higher prices for contracts, according to quantity, purchaser and date of delivery. Much of the trading is for future requirements, as the current consumption, while improving, is still far from heavy.

Metals.—The whole list is firm, with advances on Tin, Spelter and Sheet Zinc. Casting Copper is unchanged at 15c. to 15⅛c.; Lake at 15¼ to 15½c. Pig Tin has advanced ½c., being quoted now at 31c. to 31½c. Pig Lead is still held officially at 4.20c. for 50-ton lots, 4.30c. for car lots and 4.50c. for small lots, but is hard to get at any price. Spelter has advanced and is now quoted at 5.65c. minimum for car lots and 5¾c. to 5⅞c. in smaller lots. Sheet Zinc has been given its third 10c. raise and is now quoted at 6.65c., Chicago, in car lots of 600-lb. casks and ¼c. to ½c. higher for small lots.

Philadelphia.

FORREST BUILDING, November 29, 1904.

The Iron and Steel markets are still in a very unsettled condition and it is extremely difficult to define the position as regards prices. The truth of the matter is that no one wants business under present conditions, so that quotations are liable to be misleading, according to whether the seller wishes to avoid taking the order or is willing to take it as an accommodation to the buyer. Everything is so topsy turvey that no clear conception of what the ultimate outcome will be is at all possible. Such a curious combination of conditions never occurred before, so that, as there is no precedent to go by, a guess on one side may be just as good as on the other. The first impulse in the present movement was no doubt well founded, but there is a very general impression that later developments have been more or less speculative. Dealers in certain specialties, for instance, will pay higher prices than consumers will pay, which is pretty good evidence that there is either a short interest or an attempt to establish artificial prices. The effect upon buyers has been very impressive, as in all lines there has been a general impulse to take all that sellers were willing to let them have. Wall Street, with its Steel common at over $30 per share and Tennessee Coal & Iron Company at $77, while of no direct influence on values, and no safe criterion of actual conditions, certainly helps to hypnotize people into the idea that similar advances may be seen in the Iron trade. Besides the element of speculation there is no doubt that the results of the election have been profoundly stimulating, so that the tide is running very strongly in the direction of increased activity as well as higher prices. This is recognized on all sides, but there is a limit to even the most satisfactory movements, and as the one now in progress started unexpectedly and does not appear to be strongly intrenched on orders actually in hand, there is naturally a feeling of uncertainty as to its staying qualities. Business shows gratifying signs of improvement, and there are good prospects of a further increase; but after all the most important question is in regard to prices, which must be determined by supply and demand, and by that alone. The main reason for the strength of the market at the present time is the fear of a shortage in the supply. While a better demand is a foregone conclusion, there is no immediate shortage in Pig Iron, but the scarcity of Coke and Ores is beginning to frighten people into the idea that such a contingency is not improbable; consequently they have all been trying to get as much Iron as possible. The situation is therefore so abnormal that it is quite impossible to form any very clear idea in regard to how much Pig Iron will be produced during the next two or three months, how much will be consumed and what the range of prices will be, the latter, of course, being contingent upon the former. Pig Iron makers find that costs are increasing, and with a demand for all they can make, they are naturally in a position to name almost their own prices. They see the possibility of danger in further advances, however, and would rather that their customers would hold off until the speculative fever dies out and normal conditions are restored. Whether they will do so or not remains to be seen, and in the meanwhile prices may go higher, although under ordinary conditions December should be a period of comparative dullness, during which a fairly good estimate may be formed in regard to requirements during the first quarter of the coming year. At present it is utterly impossible to form any definite opinion in regard to tonnage requirements, and as all hinges on that, there is no alternative but to await developments, which, however, promise to be entirely favorable.

Pig Iron.—Prices at the present time are largely a matter of private arrangement between buyer and seller. Ordinary quotations are $16.50 for No. 2 X Foundry, $16 for No. 2 Plain, $15.50 for Gray Forge and $15.50 for Basic. In some cases these prices have been shaded a little, although in most cases to parties who had quotations given them last week, and which would not be duplicated to-day. Some quote higher figures than above named, and say they are getting business without much trouble, but of course something depends on analysis, on point of delivery and date of delivery, but taking everything into consideration the market is strong, and ordinarily buyers consider they are doing very well if they can place their orders at prices first named. It is impossible to say what the next move will be, as it depends very largely on what attitude buyers assume. If they are satisfied with what they have

bought prices will soon steady themselves, but if they are determined to add to the lines already secured prices will necessarily work higher. There is ample reason for the assertion that consumers are well bought ahead and that further purchases, which would mean higher prices, would be fraught with danger. The furnaces in this vicinity have orders on their books averaging about 14 weeks of their output, so that further buying does not appear to be a necessity, but would be sure to affect prices if persisted in. The shortage in Mill Irons is more pronounced than in Foundry grades, but it is quite likely that by the end of the year things will be pretty well evened up. The Thomas Iron Company will have two additional furnaces in operation in course of a week or two. The Durham is also ready for operation, so that the tendency will probably be toward larger supplies during the coming month. Prices average about as follows for Philadelphia and nearby deliveries:

No. 1 X Foundry	$17.00 to $17.25
No. 2 X Foundry	16.50 to 16.75
No. 2 Plain	16.00 to 16.25
Standard Gray Forge	15.50 to 15.75
Ordinary Gray Forge	15.00 to 15.25
Basic	15.50 to 15.75
Low Phosphorus	19.75 to 20.00

Muck Bars.—There is not much demand, although buyers could be found at about $27.50, at mill, for good neutral Bars. Makers ask $28, f.o.b. their mills.

Steel.—There is a heavy demand and sales have been quite liberal, although prices are higher. About $24.50 to $25, delivered, would have to be paid for the ordinary run of business, although sellers might shade a trifle on orders desirable as to specification and deliveries.

Plates.—Business is quite active and prospects for its continuance are very favorable. Mills are running nearer to their full capacity than they have done at any time this year, but they could do more if they had it to do, as much of the recent business is for next year's delivery. Prices are strong, and in some cases extra prices have been paid to insure deliveries on dates specified. Prices unchanged, but very strong as last quoted, viz.:

	Carload Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel, rectangular Plates, 24 inches wide and under	1.43½	1.48½
Tank, Bridge and Boat Steel, over 24 inches wide	1.53½	1.58½
Flange or Boiler Steel	1.63½	1.68½
Marine, A. B. M. A. and Commercial Fire Box Steel	1.73½	1.78½
Still Bottom Steel	1.83½	1.88½
Locomotive Fire Box Steel	2.03½	2.08½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Per 100 pounds extra
3-16 inch thick	$0.10
Nos. 7 and 8 W. G.	.15 "
No. 9 W. G.	.25 "
Plates over 100 to 110 inches	.05 "
Plates over 110 to 115 inches	.10 "
Plates over 115 to 120 inches	.15 "
Plates over 120 to 125 inches	.25 "
Plates over 125 to 130 inches	.50 "
Plates over 130 inches	1.00 "
All sketches (excepting straight taper plates, varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10 "
Complete Circles	.20 "

All the above f.o.b. Philadelphia.

Structural Material.—The demand has shown a very marked improvement of late, orders from the bridge shops having been specially large. All branches seem to be getting more business, however, so that the movement is of a general character, and therefore more satisfactory than if confined to one interest. Prices unchanged as follows: Beams, Channels and Angles, 1.53½c. to 1.65c., according to specifications, and small Angles, 1.50c. to 1.55c.

Bars.—The demand for Bars has been so great that most of the mills no longer accept association prices, but make such rates as they deem advisable for the specifications that are put before them. Some of the mills could take a good deal of business yet, but association prices are no inducement under the present cost of raw materials. Probably 1.50c. to 1.60c., delivered, would fairly represent the market for Bar Iron. Steel unchanged at last week's prices.

Sheets.—There is all the business the mills can take care of, so that there is not much dickering on prices so long as deliveries can be made mutually satisfactory.

Old Material.—Prices are again higher and vary so much that it is hardly possible to make close quotations. The inside figures named below are easily obtainable, but sellers in most cases ask outside rates and sometimes more than that, there being no uniformity of either quotations or opinions at the present time. Bids and offers for deliveries in buyers' yards are about as follows:

No. 1 Steel Scrap	$16.00 to $16.50
Old Steel Axles	19.00 to 19.50
Old Iron Axles	22.00 to 23.00
Old Iron Rails	18.50 to 19.50
Old Car Wheels	14.00 to 14.50
Choice Scrap, R. R. No. 1 Wrought	18.50 to 19.50
No. 1 Yard Scrap	17.50 to 18.00
Machinery Scrap	14.50 to 15.00
Low Phosphorus Scrap	18.00 to 19.00
Wrought Iron Pipe	14.50 to 15.00
No. 1 Forge Fire Scrap	14.00 to 14.50
No. 2 Forge Fire Scrap, Ordinary	11.00 to 11.50
Wrought Turnings	12.00 to 12.50
Wrought Turnings, Choice Heavy	12.75 to 13.50
Cast Borings	9.50 to 10.00
Stove Plates	13.00 to 13.50

Pittsburgh.

PARK BUILDING, November 30, 1904.—(*By Telegraph.*)

Pig Iron.—Prices on Pig Iron seem to be running wild, and there is no telling where the market will stop. Prices are fully $1 a ton higher than last week, and predictions are freely made that Bessemer Iron will touch $20, at Valley furnace, before January 1. Last week some moderate sized sales of Bessemer and Basic Iron for December and January shipment were made on the basis of $15, at furnace, but this week $15.50 to $16 is the minimum quotation, with some sellers refusing to sell below $16. Reports are that the Republic Iron & Steel Company has bought 25,000 to 30,000 tons of Bessemer for forward shipment for use in its plant at Youngstown. An inquiry is in the market for 10,000 tons of Bessemer for export for December and January shipment, but nothing definite has been done on this inquiry as yet. Some good sized purchases of Foundry Iron have been made in the past week, the Westinghouse Electric & Mfg. Company having bought 9000 tons, of which 6000 tons was Northern No. 2, for which it paid $15, Valley furnace, 2000 tons was Virginia Iron, which sold at $14, at furnace, while the other 1000 tons was Southern No. 2, which brought $13, Birmingham. The United States Cast Iron Pipe & Foundry Company has bought 14,500 tons, of which 7000 tons was Southern No. 2, for which it paid $13, Birmingham, and the other 7500 tons was Northern No. 2, for which it paid $15.50, Valley furnace. There is an absolute famine in Forge Iron, and it can hardly be had at any price. Several sales of Northern Forge have been made on the basis of $15, Valley furnace, while for delivery into second quarter of next year $15.50, at Valley furnace, has been paid. Northern No. 2 Foundry Iron is $15.50 minimum, but most sellers are holding for $16, and it is very doubtful if very much No. 2 Foundry could be bought under $16, Valley furnace.

Steel.—A meeting of the Billet Association is soon to be held in New York, at which prices of Billets, Sheet and Tin Bars are expected to be advanced at least $1 and probably $2 a ton. The demand for Steel is heavy, consumers trying to cover on both Billets and Bars before the market advances further. We quote Bessemer and Open Hearth Billets at $21; Forging Billets, $23; Long Sheet and Tin Bars, $23, and Cut Bars, $23.50, all f.o.b, Pittsburgh, to which freight to destination is added.

Coke.—In the last day or two contracts for Connellsville Furnace Coke for the first six months of next year have been made on the basis of $2.15 at oven, while one Coke company is quoting 72-hour Foundry Coke for first half of next year at $2.75 a ton at oven.

(*By Mail.*)

About the only disturbing factor, if such it can be called, in an otherwise splendid condition in the Iron trade is the shortage in cars, which, while not very seriously felt yet, promises to become acute, especially if there should be a sudden freeze up or a very heavy snow. During this month orders for Iron and Steel products of all kinds have piled in on the mills at a rapid rate and shipments on much of this material will be made during December, and that month promises to have the heaviest tonnage that the railroads have handled in any one month this year. Should we have zero weather or heavy snows early in December, serious delays in making shipments are certain to occur and for this reason it would seem to be policy on the part of consumers to anticipate requirements as much as possible, so that delays and deliveries may be minimized when they need the material. For the past year the railroads have bought very sparingly of cars, locomotives and other supplies, and equipment has run down very much. It is doubtful if the railroads are in as good position now to handle as heavy tonnage as they were at this time last year, and the trade well remembers the freight blockade in the Pittsburgh district, which lasted through the winter months. The railroads are realizing to some extent the enormous freight tonnage that is ahead of them, and some very large orders for steel and wooden cars have been placed in the past two weeks. Orders for fully 30,000 cars have been placed, the business being about equally divided between the Pressed Steel Car Company and Standard Steel Car Company of this city, and the American Car & Foundry Company of Detroit. It is said that before January 1 orders for fully 75,000 cars will have been placed and the two local works of the Pressed Steel Car Company and the plant of the Standard Steel Car Company at Butler are now in operation to full capacity, the first time for more than a year. The heavy orders for steel cars that have been placed mean an enormous tonnage to the Plate mills in the Pittsburgh district.

Prices of Pig Iron continue to advance, Bessemer for this year's shipment reaching $15, Valley furnace, which is

the minimum of the market, quite a few sales having been made at this figure. A leading Steel works has bought about 30,000 tons of Bessemer Iron, and an inquiry is in the market for 10,000 tons of Bessemer Iron for export shipment. A local interest has bought 9000 tons of Foundry Iron for first quarter shipment, divided between Northern and Southern makes, paying $15 and above for Northern No. 2 at Valley furnace. There is a scarcity of Forge Iron and with an active inquiry prices have touched $15, Valley furnace, or higher for March and April shipment, while for first quarter delivery $14.50, Valley, has been done. Predictions are made that Bessemer and Basic Iron will go to $18, Northern No. 2 Foundry to about the same price and Northern Forge to $16 before the present upward movement has ended.

We have official advices that another advance in Billets, Sheet and Tin Bars is to be made at a meeting of the Billet Association, to be held in New York December 20. This advance will be $1 or $2 a ton, probably the latter. The Carnegie Steel Company is refusing to sell Billets or Sheet Bars beyond January 1 at present prices.

It is also practically certain that prices of Plates and Structural Steel will be advanced at meetings of the associations to be held in New York after the Billet meeting on December 20. This advance will be at least $2 a ton and possibly $4. In the meantime buyers of Plates are placing heavy contracts and the mills are full of work. The tonnage in Sheets, Plate and Pipe is very heavy and it looks as though higher prices in these products may come shortly after January 1, if not before. The whole market on Finished Iron and Steel is in a buoyant condition, with all indications pointing to higher prices.

The situation in the Coke trade, from the standpoint of water supply, is no better and output is seriously restricted. During the week contracts for strictly Connellsville Furnace Coke for shipment all through 1905 have been made on the basis of $2.10 to $2.15 at oven. Connellsville 72-hour Foundry Coke is selling as high as $2.50 a ton at oven on contracts for first half of next year.

The Scrap trade continues active and prices are very firm. Heavy Steel Melting Scrap has sold in the past week as high as $16, in gross tons.

Ferromanganese.—A moderate amount of tonnage is being sold, and at prices about $2 a ton higher than a month ago. We quote 80 per cent. foreign and domestic Ferro at $42.50 to $43, delivered, for large lots.

Wire Rods.—There is a moderate inquiry for small lots, and large consumers are pretty well covered. Prices are firm and higher, and we quote Bessemer and Open Hearth Rods at $28, Pittsburgh.

Skelp.—Conditions in the Skelp trade continue active, demand being heavy and prices very strong. The Skelp mills are pretty well filled up with tonnage for the next several months. Grooved Iron Skelp, 1.55c. to 1.60c.; Sheared Iron Skelp, 1.60c. to 1.65c.; Grooved Steel Skelp, 1.40c. to 1.45c., and Sheared, 1.50c. to 1.55c. These prices are for ordinary widths and gauges, f.o.b. cars, maker's mill, terms 30 days, less 2 per cent. for cash in 10 days.

Muck Bar.—Prices of Forge Iron continue to advance rapidly, carrying Muck Bar with it, and which is now selling at the highest prices it has brought for more than a year. We quote best grades of Muck Bar, made from all Pig Iron, at $26.50 to $27, Pittsburgh.

Steel Rails.—Reports are that an arrangement has been made between the Lackawanna Steel Company and the Rail pool satisfactory to both sides, and that the Lackawanna people will be a member of the pool for the next year. It is understood the percentage granted to Lackawanna, while not as large as demanded, is the second largest in the pool. The feeling is growing that no change will be made in the price of Standard Sections for next year, owing to the general betterment in the Steel trade. The Carnegie Steel Company is filling an order for 18,000 tons of Steel Rails for the Seoul-Fusan Railroad, which system the Japanese military authorities are building in Corea. We quote Standard Sections at $28, at mill. Demand for Light Rails is good and prices have advanced at least $3 a ton in the past month. We quote Light Rails at $21.50 for light sections and up to $25 for heavier sections, f.o.b. at mill.

Beams and Channels.—Some good sized contracts have been placed in the past week, among these being 2750 tons of bridge work for the Buffalo & Susquehanna Railroad, 3000 tons by the Louisville & Nashville for elevated work at Cincinnati, and 500 tons by the Wabash for a lift bridge at Cleveland. Complaint is made about the low prices ruling for fabricating and erection work, and it is said some large jobs have recently been taken at prices which left little or no profit to the bidder. We quote: Beams and Channels, up to 15-inch, 1.40c.; over 15-inch, 1.50c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.40c.; Angles, 8 x 8 and 7 x 3½ inches, 1.50c.; Zees, 3-inch and larger, 1.40c.; Tees, 3-inch and larger, 1.45c. Under the Steel Bar Card, Angles, Channels and Tees under 3-inch are 1.40c., base, for Bessemer, and 1.45c., base, for Open Hearth, subject to half extras on the Standard Steel Bar Card.

Plates.—The leading Plate interests are advising their customers to buy as far ahead as possible, and as result a very heavy tonnage is being placed, much of it for delivery through first half of next year. It is said that upward of 25,000 cars have been placed this month, which means an enormous tonnage in Plates and Small Shapes. Some of the Plate mills are filled up for the next several months and the outlook could not be better. We quote Tank Plate, ¼ inch thick, 6¼ to 24 inches wide, 1.30c., base; over 24 inches wide and up to 100 inches in width, 1.40c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Per 100 pounds extra.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edges	$0.10
Gauges No. 7 and No. 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates, varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A." and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50

Shell grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum, and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast not included.

Sheets.—We note a very active market in Sheets and tonnage booked, and shipments made this month by some of the leading mills will be much the heaviest for more than a year. In view of an almost certain serious shortage in cars consumers are being advised to anticipate their wants as far ahead as possible to prevent delays in deliveries when Sheets are needed. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls at 1.95c.; No. 26, 2.05c.; No. 27, 2.10c., and No. 28, 2.20c. We quote Galvanized Sheets, as follows: Nos. 22 and 24, 2.65c.; Nos. 25 and 26, 2.85c.; No. 27, 3.05c.; No. 28, 3.25c. We quote No. 28 Gauge Painted Roofing Sheets at $1.60 per square for 2½-inch corrugation. Jobbers charge the usual advances over these prices for small lots from store.

Iron and Steel Bars.—The Republic Iron & Steel Company has made a further advance in prices of Bar Iron, and now quotes on the basis of 1.50c., Youngstown, or 1.54½c., Pittsburgh. The tonnage in both Iron and Steel Bars is heavier than for months, and the leading mills are pretty well filled up. There is no change in Steel Bars, but an advance in these is expected to be made in the latter part of this month or very early in January. We quote Bessemer Steel Bars at 1.30c., base; Open Hearth Bars at 1.35c., base, with the usual differentials for small lots.

Railroad Spikes.—The demand is more active than for some time and some large contracts are being placed with the mills. We quote Railroad Spikes at $1.60 in carloads, and $1.65 in less than carloads, per 100 lbs., f.o.b. Pittsburgh.

Hoops and Bands.—The demand for both Hoops and Bands is very active and higher prices in the near future are predicted. We quote Steel Hoops at 1.55c. and Steel Bands at 1.30c., extras as per Steel Card. On very desirable orders for Hoops our quotation is sometimes slightly shaded.

Tin Plate.—The demand continues heavy and some of the mills advise us that for spot shipment they are able to secure a premium of from 5c. to 10c. per box over regular prices. The American Sheet & Tin Plate Company is booking a heavy tonnage and has started up three or four of its largest Tin Plate plants in the past week or ten days. The outlook is that the Tin Plate mills will have plenty of work through the winter months. We quote 100-lb. Cokes at 3.40 net, f.o.b. Pittsburgh, terms 30 days, or 2 per cent. off for cash in ten days.

Merchant Pipe.—The Pipe trade is in very satisfactory shape and general conditions could hardly be better. Several of the leading mills state that their tonnage is practically sold up for the next several months and they are not very anxious to book further orders, as it is believed prices of Pipe may be higher shortly after January 1. The National Tube Company is making heavy daily shipments on its contract for 150 miles of 16-inch Pipe for the Kansas gas field. A part of the Lorain plant of this interest will probably be started within a short time. Discounts to consumers in carloads are as follows:

Merchant Pipe.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
⅛ and ¼ inch	69	53	67	51
⅜ and ½ inch	73	61	71	59
¾ to 6 inches	77	67	75½	65½
7 to 12 inches	72	57	70½	55

Extra strong, plain ends, ⅛ to ⅝ inch	62	50	60	48
½ to 4 inches	69	57	67	55
4½ to 8 inches	65	53	63	51
Double extra strong, plain ends, ⅛ to 8 inches	58	47	56	45

Boiler Tubes.—A pleasing feature of the Tube trade is that the railroads are becoming more liberal buyers and are placing some good sized orders. Demand from the general trade is also good and the market is very firm. Discounts to consumers in small lots are as follows:

Boiler Tubes.

	Steel.	Iron.
1 to 1½ inches	46	43
1¾ to 2¼ inches	58	43
2½ inches	60	48
2¾ to 5 inches	66	55
6 to 13 inches	58	43

Discounts on Boiler Tubes in carload lots are two points lower than the above.

Merchant Steel.—The condition of the trade is very satisfactory, the tonnage in November being quite heavy and specifications on contracts from implement makers and other large consumers are coming in very nicely. The market is firm and we quote: Tire Steel, 1.50c. to 1.55c.; Open Hearth Spring Steel, 1.90c. to 2c., depending on order; Sleigh Shoe, flat, 1.45c. to 1.50c.; Cutter Shoes, tapered and bent, 2c.; Smooth Finished Machinery Steel, 1.50c.; Toe Calk Steel, 1.85c. to 1.90c. Cold Rolled Shafting is unchanged in price, being 52 per cent. off in carloads and 47 per cent. in less than carloads delivered in base territory.

Spelter.—The market has again sharply advanced and fine grades of Wester Spelter for spot shipment are now held at 5.55c. to 5.58½c., Pittsburgh.

Coke.—As yet there is no relief in the water famine in the Connellsville region, and a number of the larger Coke plants are eitner shut down entirely or working short time for lack of water. Four of the Frick Coke Company plants are idle for this cause and the Brown & Cochran works have been idle for several months for the same reason. Prices of Coke continue to advance and in the past week some large contracts for strictly Connellsville Furnace Coke, for shipment through all of 1905, have been made on the basis of $2.10 to $2.15, at oven. Strictly Connellsville 72-hour Foundry Coke has been sold at $2.35 to $2.50 on contracts for first half of next year. Output of Coke in the Upper and Lower Connellsville region last week was about 185,000 tons, a slight decrease over the previous week.

Cleveland.

CLEVELAND, OHIO, November 29, 1904.

Iron Ore.—The Ore situation on the lakes has not changed much as regards the present season. The end is too near for any more sales for this year's delivery, and the tonnage is too ample for any very great changes in rates. Some slight advance may possibly be made on the few late cargoes which will come down after December 1, but no big changes need be expected. There is beginning, however, to be some talk about purchases of Ore for next year's delivery. The Ore producers are keeping clear of any such contracts at the present time, expecting to get better prices next year through the reformation of the Ore Association. The movement down the lakes is still heavy. The shipment of Ore from the lake docks to the furnace stock piles is on the increase, and in some instances it is seen that, although the movement down the lakes is extraordinarily heavy for this time of the year, the tonnage from the lakes to the furnaces exceeds that which is coming by boat. The stock piles are therefore decreasing somewhat.

Pig Iron.—The market has taken a sudden spurt during the past week, and the tonnage has been larger than any week during the recent period of heavy buying. A couple of concerns closed contracts for first quarter delivery of Foundry Iron amounting to upward of 10,000 tons, and immediately both of them withdrew from the market until after April 1. Some of the other producers have been off the market, as far as contract Iron is concerned, for a week or two, and still others are on the verge of withdrawing from the market, having about covered the capacity upon which it is safe to contract. Most of these furnaces will, of course, have some Iron for delivery on spot orders from time to time, but the most of them are pretty well sold up. Prices have gone higher this past week. Quotations on No. 2 Foundry are now at $16, at the furnace. One Cleveland furnace sold Iron at $15.50, at furnace, for out of town delivery, and then advanced to $16 and sold liberally at both prices. A few of the furnaces are now selling at $15.50 for second quarter delivery of next year, but the most of them are holding off. Some of the buying has been speculative, being against a possible need which has not actually appeared. The Bessemer and Basic trades are rather quiet. There is a good inquiry, but the Basic furnaces in this territory are so well sold up that they do not care to book at present prices. Some few lots have been sold at $15 to $15.50 in the Valleys for Basic. The market for Bessemer is hardly quotable in this territory, since little or no Iron has been sold. Coke prices are higher. One of the big producers is holding for $2.75 for 72-hour Foundry Coke at the oven and $2.50 is the minimum. The average sales are at $2.60. The Furnace Coke prices range about $2.15 to $2.25.

Finished Iron and Steel.—The market has continued strong, with hardly a weak feature so far as Cleveland is concerned. The situation which is perhaps the center of comment is Bars. Bar Iron prices have been advanced until the mills are holding for 1.55c., Youngstown, and the market seems to have 1.50c., Youngstown, as the minimum. The mills are not very anxious to sell at that price. The stress of buying is not so much an influence as the cost of the raw material, Scrap prices having been given another boost, which, the mills say, makes it impossible to sell Bar Iron for any less price. There has been some buying at both 1.50c. and 1.55c., Youngstown, and the tonnage does not seem to diminish much as the prices rise, although there is some substitution of Steel for Iron. In the Steel trade there has been some talk of higher prices, and some of the larger mills are now refusing to make sales after January 1. This situation is not general, however, as some are taking contracts to July 1 on the present basis, although most of them are limiting contracts to April 1. The mills which wish to satisfy old customers are more liberal with the terms of their contracts. None of the mills is soliciting Bar business. Bessemer Bar Steel prices hold at 1.30c., Pittsburgh, with the usual difference on Open Hearth. There has been some fair spot buying of Structural, but no new contracts of any importance have come into the market. About the same situation obtains in Plates, the mills being well supplied for business and not being in any rush to get more contracts. The buying of Sheets did not stop when the price went up. There was a sudden rush to buy just before the prices advanced, but now that that tonnage has been in part used up, some are coming back to buy, and show no tendency to reduce the size of their orders. The base prices on Black Sheets out of stock are 2.40c. for Nos. 22 to 24. The base quotation for the same gauge in One Pass Cold Rolled in car lots at the mill is 2.10c. No new contracts have appeared in the Rail trade, but there has been heavy specification against the old contracts for traction properties. The tonnage out of Cleveland on these contracts has been running upward of 500 tons daily. These orders represent four new traction deals which are just being pushed through. There has been fair buying of Billets on the new basis of prices, which is $22.90, Cleveland, for Bessemer 4 x 4 or up to 10 inches.

Old Material.—The market has been much stronger and higher prices are being paid, with hardly any diminution of business. The dealers are playing pretty close to the cushion and are selling in lots of only about 200 tons at a time, expecting constantly a further advance. The belief is that prices will work $1 or $2 a ton higher. The quotations have been revised and are quoted as follows, all gross tons: Old Steel Rails, $14 to $14.50 and higher; Old Car Wheels, $14; Heavy Melting Steel, $14. All net tons: Cast Borings, $7; No. 1 Busheling, $13 to $13.50; No. 1 Railroad Wrought, $15; Iron Car Axles (nominal, some sizes higher), $18 to $19; No. 1 Cast, $14.50; Stove Plate. $10; Wrought Iron and Steel Turnings and Drillings, $12.

Cincinnati.

FIFTH AND MAIN STS., November 30, 1904.—(*By Telegraph.*)

Pig Iron.—The tone of the market is very strong, and if we are to believe half we hear we should say that everything points to still higher prices. This week's report is no exception to those of the present month that have preceded it, and the closing days of November show a decided advance in quotations. The demand for Southern Iron has greatly strengthened during the past week, and while some of the heavier producers of this territory have sold considerable tonnage for home consumption, it is safe to say that in very many instances they are holding aloof from entering into further contracts beyond the first three months of next year. From all reports it would seem that Southern furnacemen are of the firm opinion that prices will gradually go higher, and that such being the case they will stay out of the market until that time arrives. Northern producers are still securing a large share of the business that is offering, but from what we can gather it would appear that they are only biding their time when they will put their product on more of a parity with its competitor in the South. Agents report a great number of sales of both Northern and Southern in scattered lots and in large and small tonnage, with inquiries very active and having the true ring to them. The demand for Iron among the builders of cars and heavy manufacturing concerns that supply the running gear for these industries has shown surprising gains recently, and the tonnage consumed by this class of builders has been enormous. Several large sales have been made during the week, the largest tonnage probably going to one of the leading Pipe companies, which is reported as having secured 15,000 tons in one instance, and also several thousand tons of No. 4 and Gray

Forge mixed at very near market price. It is reported that it is still in the market for large tonnage, and is buying all the Iron it can secure of the lower grades for early delivery. Another sale of 8000 tons is reported to a large manufacturing concern, which bought mainly Northern and Southern and the remainder Virginia. La Follette Furnace has blown out, and will rebuild immediately on entirely new lines. This will probably take until the middle of March, at which time it is expected to again resume operations. Freight rates from Hanging Rock district to Cincinnati, $1.15, and from Birmingham, $2.25. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$16.25 to $16.75
Southern Coke, No. 2	15.75 to 16.25
Southern Coke, No. 3	15.25 to 15.75
Southern Coke, No. 4	14.75 to 15.25
Southern Coke, No. 1 Soft	16.25 to 16.75
Southern Coke, No. 2 Soft	15.75 to 16.25
Southern Coke, Gray Forge	14.50 to 15.00
Southern Coke, Mottled	14.25 to 14.75
Ohio Silvery, No. 1	18.15 to 18.65
Lake Superior Coke, No. 1	16.65 to 17.15
Lake Superior Coke, No. 2	16.15 to 16.65
Lake Superior Coke, No. 3	15.65 to 16.15
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	$17.75 to $18.25
Lake Superior Car Wheel and Malleable	17.00 to 17.50

Coke.—This market is much stronger; the demand for the furnace variety, however, is said to be far in excess of that for Foundry grades. There are the usual delays incident to this season of the year, owing to the lack of transportation facilities, accentuated to a large degree by the excessive drought that has prevailed in most of the producing districts for a number of months. Prices are firm and probably a shade higher than our last report. We quote the best grades from $2.40 to $2.60, f.o.b. ovens.

Plates and Bars.—Demand is good and the market in keeping with that of Pig Iron, which is strong and active. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.50c., with half extras; the same in smaller lots, 1.70c., with full extras; Steel Bars, in carload lots, 1.43c., with half extras; the same in smaller lots, 1.65c., with full extras; Base Angles, 1.53c., in carload lots; Beams and Channels, in carload lots, 1.53c.; Plates, ¼-inch and heavier, 1.53c., in carload lots; in smaller lots, 1.80c.; Sheets, 16-gauge, in carload lots, 2.05c.; smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, ¾ x 3-16 and heavier, 1.63c., in carload lots.

Old Material.—Dealers report an exceedingly active market, with sales representing a large tonnage in the aggregate of frequent occurrence. The quotations given below are dealers' prices and do not apply where any considerable tonnage is concerned. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $16 to $17 per net ton; No. 1 Cast Scrap, $13 to $14 per net ton; Iron Rails, $20 to $21 per gross ton; Steel Rails, rolling lengths, $14 to $15 per gross ton; Relaying Rails, $21 to $22 per gross ton; Iron Axles, $20 to $21 per net ton; Car Wheels, $14 to $15 per gross ton; Heavy Melting Scrap, $13 to $14 per gross ton: Low Phosphorus Scrap, $17 to $18 per gross ton.

The Central Foundry Company.

Following is the fifth annual report of the Central Foundry Company, submitted to the stockholders by President Alfred Fowle, Jr., 116 Nassau street, New York.

I herewith submit the annual report of the financial condition of your company at the close of its fiscal year, June 30, 1904:

Assets.

Plant investment	$15,569,254.60	
Less equipment melted during the fiscal year	5,438.61	
	$15,563,815.99	
Less depreciation of properties	218,434.91	
		$15,345,381.08
Treasury stock		700,000.00
Entire capital stock of subsidiary companies paid in cash at par		1,100,000.00
Notes receivable from subsidiary companies for money advanced for construction and working capital	$127,908.21	
Less notes discounted	10,000.00	
		117,908.21
Accounts and bills receivable	$427,021.74	
Less freight allowances and cash discounts	19,000.00	
		408,021.74
Inventory		426,218.35
Cash		63,446.19
Unexpired insurance and taxes		3,025.93
Furniture and fixtures		4,771.14
Total		$18,168,772.64

Liabilities.

Capital stock	$14,000,000.00
Debenture bonds	3,863,000.00
Accrued bond interest	38,630.00
Accounts and bills payable	267,142.64
Total	$18,168,772.64

The income account of the Central Foundry Company and its subsidiary companies for the fiscal year shows:

Earnings on sales after deducting all operating charges		$467,504.46
Bond interest for year ending June 30, 1904	$231,780.00	
Expense of replacement and betterment of equipment	17,289.55	
Depreciation of properties, in suspense	$34,788.62	
Depreciation of properties	183,646.29	
	218,434.91	
Total		$467,504.46

The results of the past year, while a disappointment to the expectations of your officers of a year ago, will, we trust, be accepted as satisfactory, after taking into consideration the depressed conditions that have existed in all classes of business, especially the iron industries and those branches thereof pertaining to the building trades lines, together with the labor troubles that have been practically continuous in certain sections, all of which have had a material tendency to restrict consumption, reduce values and, in some instances, increase competition. Considerable advancement has been made during the past year in the development and exploitation of certain branches of your business, from which gradually increasing advantages should follow.

The first year's operation of the Central Radiator Company with a new line of supplies, incomplete, unknown to and untried by the trade, and in a largely restricted and constantly declining market, has, much to the gratification of your officers, demonstrated its ability to maintain itself under as adverse conditions as are liable to again confront it. During the past year its equipment has been materially increased, and now includes a full line of the staple sizes and styles of radiators. The quality of its product is unexcelled; its manufacturing cost, administration and selling expense low, and with the return of a normal demand and fair market the profits will be materially increased.

The operation of the Central Iron & Coal Company as a producing company commenced August 4, 1903, before its construction work was completed, and has since that time encountered the usual difficulties and delays incident to the establishing and perfecting of labor organizations at ore mines, coal mines, limestone quarry, coke ovens and furnace, each one of which must be kept in practically constant operation, and through the medium of proper transportation facilities, in constant touch with one or more of the others, in order to maintain a proper degree of efficiency. Your cost per ton for pig iron has been gradually and steadily decreasing, and has arrived at that point where we are convinced that our expectation to produce a quality and grade of iron particularly adapted to our own consumption at as low a cost as any furnace in the Birmingham district, has been demonstrated. The present cost will be further reduced as the production is increased, and the minor difficulties, for which time and careful attention are the only remedies, are overcome.

The conditions surrounding the future of the markets for your several products are too uncertain at the present time to justify any predictions for the ensuing year, but it is hoped and believed that with your increased lines a satisfactory profit can be maintained until the consumption of the country is again on a normal basis.

Some very interesting experiments in using direct current at 70,000 volts for the transmission of power over the constantly increasing distances which are necessary for industrial purposes have been undertaken by an electrical firm at Geneva, Switzerland. The tests were made principally for the purpose of determining to what degree insulation will serve with continuous, as compared with alternating, current.

Chicago Machinery Market.

CHICAGO, November 26, 1904.

The demand for machinery is responding actively to the betterment of conditions in iron and steel and in industrial affairs generally. Requirements for speedy delivery accompany almost every purchase of or inquiry for machinery. Dealers are doing a good business from stock, and if the present rate of increase keeps up it will not be long before accumulated supplies will be exhausted, and makers will be hard set to supply current demand.

Probably the most important division of machinery at the present moment is that relating to electrical lighting and power propositions, notably interurban railway lines. The map of Illinois, for instance, is gridironed with dotted lines indicating proposed trolley lines, which if built in the next year or two, as proposed, will involve the expenditure of many millions of dollars. Of course many of these are only on paper, and will not result in actual construction work for many years to come; but the fact that existing interurban lines in Ohio, Michigan, Indiana and Illinois have, as a rule, paid handsomely is attracting favorable attention of capitalists to this channel of investment.

The most noteworthy propositions in the city of Chicago are the transfer of the freight tunnel system to a new company owned by the 24 trunk railway lines entering Chicago and a new 30-acre plant proposed by Sears, Roebuck & Co., large mail order merchants and manufacturers. The tunnel enterprise is, of course, the more important of the two because of the greater amount of money involved and the greater results to the city itself.

What was once simply an independent telephone scheme and which developed into a freight tunnel project, known as the Illinois Tunnel Company, has now been absorbed by a newly formed company known as the Chicago Subway Company. The charter of the Chicago Subway Company is a liberal one, as New Jersey charters are apt to be. It permits the company to do a passenger as well as a freight business, to distribute steam heat, to sell electric light and power, to run refrigerating plants, to operate telegraph lines and pneumatic tubes, to conduct a parcel delivery system, to furnish telephone service, to carry on the business of storage and warehousing of merchandise and to produce, manufacture and otherwise prepare and deal in any materials, machinery, appliances, supplies or products which may be used in or in connection with any of the objects aforesaid. However, the franchise granted to the Illinois Tunnel Company by the City Council is considerably less liberal in its scope, and permits in general only the construction and operation of tunnels for caring for pneumatic tubes, wires, conduits and the conducting of an underground railway for the transfer of freight. The new company, or, in other words, the Chicago Subway Company, has secured control of two-thirds of the stock of the Illinois Tunnel Company, but the Illinois Tunnel Company will retain its identity as a constructing and operating company, and A. G. Wheeler and George W. Jackson will retain their positions as president and general manager, respectively, of the Tunnel Company proper. The control of the affairs of the large company, which was incorporated for $50,000,000, will be vested in a board of seven directors to be appointed by joint agreement of the 24 railroads who constitute the owners of the Subway Company. The fact that this great underground freight system, which has already 22 miles of tunnel constructed, has been turned over to the steam roads, guarantees immediate tonnage probably up to the full carrying capacity of the tunnel, something that would have required years to develop under an independent system. Furthermore, the increased capital will permit the backers of the proposition to extend their lines and to undertake immediately the erection of a great power plant or possibly several power plants for generating sufficient electricity for operating the tunnels. As has been previously reported in these columns, a tract of land was bought on Quarry street and Archer avenue, where a power plant will be erected. Officials of the company state that they have not asked for bids or prepared specifications on this power plant, but it is known that the requirements will be very large. Another plant will be installed for the handling of coal, as the largest item of tonnage to be hauled in the tunnel in the downtown district will be coal for office buildings, hotels and other large users. It is planned now to construct a central transfer yard, which will connect with the underground tunnel by means of inclines. This yard will be equipped with modern handling and haulage facilities for transferring contents of the standard gauge surface cars to the narrow gauge tunnel cars. It is estimated that $10,000,000 will be expended by the company in the next 12 months.

Sears, Roebuck & Co., one of the two great mail order houses of Chicago, find it necessary to remove from their present quarters at Des Plaines and Fulton streets to larger quarters. It was their original intention to extend to the block next westward, and as a matter of fact the whole block was purchased, but even this was found to be too small for the purpose, and the scene of operation was changed to a site ½ mile long and 300 feet wide, extending from Central Park avenue, on the west, to Kedzie avenue, on the east, and from Harvard avenue, on the north, to the Chicago Terminal Transfer Railway tracks, on the south. This tract comprises 30 acres of ground, and steps are being taken to erect on it a modern industrial city to cost, at least, $2,500,000, independent of the cost of the land. Nimmons & Fellows, Chicago, have been appointed architects to design the buildings and take charge of their erection, while the power plant proper will be in the hands of Adams & Schwab, Baltimore. The tract will be divided into two sections by South Homan avenue, which is platted through, St. Louis avenue and Spaulding avenue being closed. The buildings which will be erected immediately will be the merchandise building, the administration building, the club house and the power house. The merchandise building will be 441 feet long by 337 feet wide, eight stories high with basement and a large court in the center 100 feet wide and 240 feet long. In other words, the building will be erected in the form of a hollow square. A feature of this building will be a water tower, in which will be stored the various tanks for the water supply systems and the fire sprinkler system for the entire plant. This tower will be 50 feet square and 200 feet high. This building will be of mill construction design and a skylight covering the entire central court. This mammoth building will be devoted to the receipt and shipment of the lighter merchandise articles, and special attention is being given to the arrangement of the building and its equipment so as to reduce to the minimum the cost of collecting and handling materials. Trucking will be done away with entirely, and the best obtainable systems of transfer of freight will be adopted, including such installations as a spiral gravity conveyor for bringing goods down to the lower or shipping floor, overhead trolley and hoist systems, chutes, belt conveyors and the like. Plunger elevators will be used. In the rear of this main merchandise building will be two additional buildings or wings, each 115 feet wide and 700 feet long, intended for carrying and transferring the heavy articles of merchandise, such as stoves, agricultural implements, &c. These also will be equipped with modern systems of haulage and transfer. The administration building will be fire proof, 400 feet long and 150 feet wide, and adjoining it will be a club house for the employees with a fully equipped gymnasium, bowling alleys, billiard room, swimming tank, &c. The power house will be 200 feet long by 75 feet wide. It will include the latest improved machinery for furnishing power and heat and light for the entire plant. Steam turbines will be used instead of engines, and they will serve generators, dynamos, &c. The power requirements of this plant will be large, though the figures have not yet been announced.

The Navy Department has decided to establish a training school station at Lake Bluff, 31 miles north of Chicago. This will involve an expenditure of a large sum of money in the erection of buildings and their equipments, and also in the construction of a training ship. The award was made to Lake Bluff owing to efforts of prominent Chicagoans, who presented the matter to the committee, and who also tendered the land free of charge. The land which was paid for by private subscription cost $175,000, and includes a tract of 30 acres on the edge of the 100-foot bluff overlooking Lake Michigan.

Specifications on the 20,000,000-gallon pumping engine for the Sixty-eighth street water works plant, mentioned last week, call for a horizontal compound condensing pumping engine of that daily capacity, direct pressure service against a normal head of 125 feet, with a maximum of 140 feet. Bids are to include concrete and brick foundations, steam separator, condenser, piping, gauge boards with eight gauges, four indicators, complete oiling system, air compressor, calorimeter, planimeter, and other tools and accessories necessary to a complete pumping plant, with the single exception of boilers, which are already in place. The engine is to be delivered, installed, started and kept in operation two years at the expense of the bidder. Bids close December 16. F. W. Blocki is Commissioner of Public Works.

The city engineer is now considering the bids offered on two 40,000,000-gallon pumping engine outfits, one for the Central Park avenue and one for the Springfield avenue water works stations. In all, four firms bid on this proposition, the following being the figures offered:

	Two engines.	One engine.
Allis-Chalmers Company, Chicago	"a" $209,000	"a" $107,600
	"b" 223,600	"b" 113,070
	14 months.	12 months.
Wm. Tod Company, Youngstown, Ohio	"a" $237,000	
	18 months.	
	"b" 227,000	
	20 months	
Henry R. Worthington, New York City	$178,500	
	12 months.	
Holly Mfg. Company, New York City	"a" $199,750	"a" $101,750
	"b" 201,900	"b" 103,900
	16 months.	12 months.

In general, bids "a" are based on the official specifications issued by the city engineer, and "b" is an alternative proposition recommended by the engine builders. The figures include not only the pumping engines themselves, but complete plants, including piping, but excluding boilers, as there is ample boiler capacity already installed at both stations. Figures also include the erection and starting of the plants. Specifications call for vertical, triple expansion, condensing, self contained pumping engines to operate at a steam pressure of 150 pounds per square inch, each to pump 40,000,000 gallons per 24 hours against a head of 120 to 140 feet. The specifications call for engines with steam jacket cylinders, having the pumps directly connected with piston rods and having outside packed plungers. The engines are to be designed for direct pressure service. Bids also include steam separators, reheating receivers, piping, condensers, feed water heaters, air pumps, feed pumps, gauge boards with full complement of gauges, complete oiling systems, as well as an independent air compressor for each engine of a capacity not less than 40 cubic feet of free air per minute at a pressure of 60 pounds per square inch. Contractors are compelled to maintain both of the engines and all the work specified in the contract for a period of two years. The bids and alternatives offered by the four bidders vary in so many details that the city engineer and his associates are making careful analysis of the bids with a view to awarding the contract to the bidder whose proposition will be most advantageous to the city in the long run.

Another feature in Chicago's industrial activity is the fact that the battle royal which has been waged between the city and the traction interests for a number of years is approaching a point where settlement is assured, and the moment this settlement is accomplished from $10,000,000 to $20,000,000 will be expended by the traction interests in improving their badly run down equipments. In this connection there is every probability that propositions now being considered may come to definite conclusion for building subways in the downtown district, which will remove from the surface of the streets the present cable and electric car lines. As has been before observed, the operation of the tunnel of the Illinois Tunnel Company will relieve the streets of practically half of their present wagon traffic. If the street car lines are depressed it will be possible to maintain Chicago streets in this district at a standard that will be creditable to the city, and will add greatly to the comfort of the immense population concentrated in this district.

It is estimated that 16 skyscrapers will be erected or at least started in the downtown district of Chicago next spring and summer, and that these will cost an average of almost $1,000,000 each. A large tonnage of structural steel and castings will, of course, be consumed in these buildings, and the machinery requirements will be great.

Geo. W. Sturtevant, Fisher Building, Chicago, is consulting engineer in charge of water works for Appleton, Wis., and Manistique, Mich. In neither case has it been definitely decided whether to utilize available water power or to install steam plants.

James W. Lyons, Fisher Building, Chicago, is purchasing equipment for a new mill for the Lee Paper Company, Vicksburg, Mich. He has already closed contracts for 2500 horsepower Babcock & Wilcox boilers, and about 2000 horsepower in Allis-Chalmers engines, and is about to close for strictly paper mill machinery. Other necessary equipment for a plant of this kind has not yet been purchased.

The Lincoln Coal Company, Lincoln, Ill., has just resumed operations in its mines, which have been on fire for eight months.

James W. Lyons, Fisher Building, Chicago, is engineer in charge of the construction of a large plant for the Elgin National Watch Company, Elgin, Ill. He has already closed contracts for two 1000 horse-power compound engines and one 400 horse-power of the same class, the engines being placed with McIntosh & Seymour Company, Auburn, N. Y. Two thousand horse-power in Aultman & Taylor water tube boilers have also been purchased, as well as Crocker-Wheeler generators delivering to about 2000 horse-power, a 60-foot, 20-ton electric traveling crane from the Whiting Foundry Equipment Company, and 2500 horse-power in Cochrane heaters. There are still to be purchased pumps and accessory machinery for a plant of this character.

The Nordberg Mfg. Company, maker of engines, Milwaukee, Wis., states that judging from the present demand for its product the pressure of business will be as great by March next as it was in the busy times of 1902.

Pawling & Harnischfeger, crane builders, Milwaukee, state there are much better indications for business in evidence during the past few weeks, and that the orders booked show a gratifying increase for November as compared with October. Prominent among their customers during November are the following: Bethlehem Steel Company, South Bethlehem, Pa., four cranes; Pennsylvania Railroad Company, Philadelphia, one crane; A. F. Bartlett & Co., Saginaw, Mich., one crane; Union Electric Light & Power Company, St. Louis, two cranes of double trolleys; Columbia Tool Steel Company, Chicago Heights, Ill., one crane; John Eichleay & Co., Pittsburgh, one crane; Alexander Traud & Co., Newark, N. J., one crane; Michigan Alkali Company, Detroit, two cranes; Benedict & Burnham Mfg. Company, Waterbury, Conn., one crane. The new Pawling & Harnischfeger plant, at Thirty-eighth and National avenues, Milwaukee, is now being placed in commission, and will be in general operation about January 1.

The Phillips Getschow Company, Chicago, has the steam heating contract for the new Majestic Theater. The company has sublet the contract for boilers to S. Freeman & Sons Mfg. Company, Racine, Wis. There will be three units, aggregating 750 horse-power. Contract for the radiators, about 400 in number, has been sublet to the American Radiator Company. The pumps and electrical equipment have not yet been arranged for.

C. H. Simmons, 218 La Salle street, Chicago, has the power and heating contract for a six-story department store being erected at Twelfth and Halsted streets. The contract for three 100 horse-power high pressure tubular boilers has been sublet to Kroeschell Brothers, Chicago.

Kroeschell Brothers, Chicago, have recently secured contracts for two 100 horse-power boilers for the Emrich Estate, and also one 72 x 18 boiler for the Eisendrath Glove Company, both of Chicago.

The L. H. Prentice Company, Chicago, has been awarded the contract by W. J. Brinkmann, architect, for furnishing the steam heating equipment for the new building being erected for the House of the Good Shepherd. The contract calls for four high pressure tubular boilers of 100 horsepower capacity each, one of which is to be installed now and the three additional later; one combination pump and receiver, 6 x 4 x 6 inch; one duplex boiler feed pump with 6-inch steam cylinder, 4-inch water plungers and 6-inch stroke.

The Philadelphia Machinery Market.

PHILADELPHIA, November 28, 1904.

Business in the Philadelphia machinery market during the past month has improved over that of October, but hardly to the extent anticipated by many in the trade. Some manufacturers expected an extensive buying movement after the passing of the national election, but in this they have been disappointed. The feeling, however, is optimistic, and it is expected by all that next year will be one of the most prosperous the trade has ever known. Some business which has long been deferred has recently come out; the railroads are beginning to give out contracts and business of this class has increased the month's sales to a fair extent. There will, no doubt, be a gradual healthy return to activity in the trade, conservative manufacturers looking for a decided forward movement to begin toward February or March of next year.

At this season, near the close of a year, business usually falls off. Buyers have their annual stock taking in mind as well as balance sheets for the year, and, until these are disposed of, plans for extensive purchases of tools or machinery are generally deferred.

Some manufacturers have taken on more business than others. There has been a partial recovery in locomotive building, with excellent claims for further improvement. The builders of large special tools have taken some orders and have other business in sight, but the general run of machine tools has not developed any particular strength in this territory.

There has been quite an improvement in inquiries, and if one-fourth of those received developed into business it would not be long before every plant in this vicinity would be working to its full capacity. But in many cases these inquiries are being placed to get a line on probable cost of improvements for discussion at early annual meetings, and also to feel the tone of the market. Manufacturers' books as a whole, therefore, do not overflow with orders, but enough work has been taken to insure regular working of the present forces at the present hours, with here or there a gain in one or the other.

Foreign demand, except in certain circles, is if anything quieter. The general machinery and tool requirements are light, as manufacturers abroad are said to be even duller than they are in this country. Some orders for shipment to the East are heard of, but lack confirmation. Specialties continue in fair demand, but manufacturers doing a regular export trade report diminished orders.

A further improvement when compared with last month is reported by the machinery and machine tool merchants during November. There have been more inquiries, more prospective buyers looking at tools, and, in fact, more actual

buying. With some it has been sales of single tools here and there; with others the closing week of the month brought some orders of good size. On the whole the feeling is decidedly better and the outlook for business considered more favorable. Dealers in the smaller sized engines, tools and boilers found business more active during the month just closed. While there has been little buying in quantity, some nice orders have been booked and the prospective business is quite encouraging. Machine shop supplies are a trifle more active, but little buying in quantity is done at the close of the year.

Deliveries of all classes of machinery and tools continue prompt. Manufacturers selling from stock fill up the gaps almost as soon as made, and, as orders have not come in with such rapidity as to make it impossible to catch up, deliveries can as a rule be made immediately. This includes the heavier as well as the medium and lighter class of tools. Special tools and machinery manufacturers can also make the usual prompt delivery for these classes of goods. Foundries are able to supply castings promptly, and idle tools in other parts of a plant are of material aid in getting out work when the regular department might become crowded.

Foundries are still more or less inactive; steel casting plants have only a small amount of work ahead, and, as a rule, are operating with reduced forces. Gray iron foundries have in some instances improved their conditions, but are not busy as a whole. Here and there a plant is operating to its full capacity, but this is the exception rather than the rule.

Prices have changed but little. On some specialties higher costs of raw materials have stiffened quotations. The general improvement of inquiry, indicating probable purchases at an early date, has made some manufacturers firmer than heretofore, but it is still the fact that discounts vary subject to the order and how badly it is wanted. On some lines quotations are firmly maintained, and remain unchanged.

H. B. Underwood & Co. have let the contract for an additional story to their plant. This will give them 4000 additional square feet of floor space, which will be used for general machine work. This company has booked quite a large amount of business during the past month, particularly for its line of portable railway tools. Boring bars and rotary planing machines have been exported both to Canada and Mexico. A complete line of rotary planing machines, crank pin turning machines, dome facing machines and rotary planing machines has been furnished to a Western railway, and a 15-inch crank pin turning machine has been shipped to Pittsburgh parties.

The Boulter Mfg. Company, Incorporated, which recently purchased the plant of the Boulter Mfg. Company, manufacturer of fire brick and clay special shapes, will make a number of improvements to its plant. It will shortly be in the market for grinding and mixing machinery as well as for other tools used in its class of work.

The Standard Pressed Steel Company reports a good demand for its pressed steel shaft hangers. It is now preparing to increase its line of sizes, taking in from 2 15-16 inch up to 3 7-16 inch shafting, with a drop of 24 inches. It is making deliveries to all parts of the country, and has established agencies for its goods in many of the large cities.

The Faulkenau-Sinclair Company, which is liquidating its business affairs, has disposed of its patterns and designs, &c., for hydraulic press work. This concern expects to dispose in the same manner of its testing machine and press designs and patterns, and then dispose of its plant, machinery and tools as a whole, the latter covering a very general line and said to be in very fine order.

The Espen-Lucas Machine Company notes a general improvement in the demand for cold saw cutting off machines as well as other tools. Inquiry has improved materially, and some business which has been held up for a long time has been placed. Orders are more plentiful, and the outlook for future business is considered very favorable. This company has shipped a number of cutting off machines of the I-beam, steel foundry and bar types to parties in New York and Western Pennsylvania as well as to local concerns.

The Earle Gear & Machine Company is fairly busy on special gear work of all kinds. Inquiries are better and indicate an early improvement in business. It has shipped recently, among other orders, a carload of cast steel cut gears ranging from 4 to 50 inches in diameter to a firm of cement manufacturers in Michigan.

The Philadelphia Pneumatic Tool Company continues to receive a good number of orders, and has been running its plant overtime to meet the demand for pneumatic tools. There has been a large number of inquiries from the South which have led up to business promptly. The Middle West has also produced good business. The demand at present runs to no particular class of tools, about an equal amount of orders being for rammers, hammers, drills and special tools.

The American Pulley Company notes an improvement in the past month's business when compared with that of the previous month. Foreign trade has held its own, but the South, New England and the Middle West have taken a somewhat larger quantity of pulleys. Export deliveries include shipments to New Zealand, Australia and Continental countries. Carload lots of pulleys have been shipped to the Middle West and Southern territory, while a good business has also been done locally.

The Philadelphia Roll & Machine Company has done a large business in chilled and sand rolls, both finished and in the rough, during the last month, and reports this branch of its business in a very satisfactory condition. Some smaller orders for special iron castings have been taken, but the tonnage is not large. Deliveries of rolls to many of the neighboring iron and steel mills as well as to those in Central Pennsylvania have been made in good volume.

Dienelt & Eisenhardt note an improvement in the demand for castings, but have had no increased demand for their various tools. Their machine shop is, therefore, not so active. Several dead stroke hammers have recently been delivered to various parties, while extensive oilcloth printing machinery is about ready for delivery.

The Eynon-Evans Mfg. Company has completed the construction of its new foundry building and installed most of the new equipment, and is now in a position to furnish castings in brass, bronze and other metal more promptly than heretofore. Business in general continues fair, the foundry having probably a greater share of work than the pattern or machine shop. Steam jet blowers have recently been furnished to parties both in the Eastern and Middle West sections, while a large number of acid resisting bronze jig plates have been furnished parties in the anthracite coal regions.

The Energy Elevator Company has had a fairly good month. Out of town demand has fallen off some, but the loss has more than been gained by an increase in local orders. Among the various elevators installed in this city was an invalid lift for John G. Johnson, an electric freight elevator for the University of Pennsylvania, a large freight elevator in Cochran's Mills and a lift for the Automobile Club of Philadelphia. An invalid lift has also been installed at Wilmington, Del., and at Zellwood, Fla., while freight lifts have been shipped to parties in Lambertville, N. J.; Maraton, N. Y., and North Wales, Pa.

Alfred Box & Co., manufacturers of cranes and hoists, are running their plant to its full capacity. The new shops recently finished are enabling them to double their former capacity as well as make prompt delivery on contracts. They note a decided increase in inquiries, particularly for electric traveling cranes, and they have booked some good orders. Among others was a 25-ton three-motor traveling crane, 85-foot span, for the Bureau of Filtration, City of Philadelphia, for the Lardner's Point pumping station, and a 25-ton gantry crane ordered by the Hartman Company for one of its out of town customers. The Bridgeport Malleable Iron Company, Bridgeport, Conn., has orered a 6-ton electric traveling crane to serve its melting furnaces, and the Harrisburg Foundry & Machine Company placed an order for a 5-ton electric hoist jib crane. Among recent deliveries made was a 10-ton hand power traveling crane for the Irvington power station of the New Jersey Street Railway Company a 10-ton gantry crane and two 5-ton three-motor traveling cranes for J. A. Roebling's Sons Company, Trenton, N. J. Several shipments of special ammunition trolley blocks for travel on I-beams have been made to various United States navy yards. Work is also progressing satisfactorily on 16 Box type mechanical stokers to be installed at the new power station of the Philadelphia Rapid Transit Company at Second street and Wyoming avenue, Philadelphia.

The Tabor Mfg. Company continues busy. There has been a good demand for molding machines for both the stove and brass foundries in the Middle West, and New York State has furnished a number of nice orders. There has also been some demand from abroad, and molding machines have been shipped to France and Belgium during the past month. A large jar ramming machine is also to be furnished parties in Scotland. Six vibrator frame machines have been furnished the Remington Typewriter Company, Ilion, N. Y., while an additional order for eight machines has been taken; this will make a total of 22 machines the Tabor Company has furnished that company. Twenty-four machines have also been furnished the Draper Machine Company. The Tabor Mfg. Company also reports a very good demand for its Taylor-Newbold saws. Duplicate orders for a 20-inch saw have been received from the Buckeye Steel Casting Company, Columbus, Ohio, and for 30 and 36 inch saws from the Tioga Steel Forge Company, Philadelphia. A 40-inch saw has been furnished the Pencoyd Iron Works, and a 26-inch saw was shipped the General Electric Company, Schenectady, N. Y. The United Engineering & Foundry Company has ordered a 40-inch saw for its chilled

roll foundry plant at Vandergrift, Pa., while a number of other orders for these saws have been received and deliveries made.

The Baldwin Locomotive Works continues the operation of its plant with reduced forces and on short hours. There has, however, been an improvement in the demand, orders having recently been taken for 100 engines, standard type, for the Harriman roads, while a number of orders for one, two and three engines from both industrial plants and railroads have been booked. There is considerable business pending, and the indications for a resumption of regular hours in some departments of the plant are favorable. Deliveries of locomotives, on orders of the New York, New Haven & Hartford, the Chicago, Hamilton & Dayton, the Midland Valley, and other railroads, as well as individual concerns, have been made during the past month.

Cincinnati Machinery Market.

CINCINNATI, OHIO, November 26, 1904.

A great improvement is to be noted in machine tool circles in this vicinity. A visit to the different shops convinces one of this fact, and the great activity along these lines is apparent in many different ways. The Presidential year has more or less sentiment connected with it, and in a great measure reflects the feeling of the country at large. While many affirm that this should have no effect on business conditions, nevertheless it cannot but exert an influence on commercial pursuits. As is no doubt conceded by almost every one, such a state of affairs has prevailed for months, and the condition of activity that obtains to-day is nothing more than the result of public knowledge that this matter is settled for a term of years, and that conditions will practically remain as they are for that period. The machinery market also reflects the advance movement in iron and steel. As the prices of the raw material continue to climb, it is anticipated that a great many consumers will jump in and purchase what tools are required before there is any advance in price. At present, according to all information, prices are holding firm, and will no doubt continue so as a result of the action taken at the convention of the National Machine Tool Builders' Association held in New York on the 16th and 17th inst. Another cause of activity is probably the almost unprecedented number of new buildings that are being erected in all sections of the country. This is causing heavy demands to be made on the structural men. Then again there is the Japanese-Russian War, which as far as the machine tool men in this city are concerned, has been a very important factor in developing and awakening trade. Several months ago, when the Japanese agents visited this city, many of our manufacturers were able to dispose of all their surplus stock, and this, coming as it did at the time when business was practically dead, was very acceptable to them. At present some of the shops are engaged in filling delayed orders from the same source, but these tools will soon be ready for shipment, and they will be ready for another installment, should the time for this arrive. The largest business being done at the present by the shops in this city, however, is of domestic origin, and is very widely distributed among all points throughout the country. The railroads are beginning to feel the market, and, from the reports of earnings, it would appear that they are gradually falling into line. There has been one cause of great dissatisfaction and delay, however, to the prompt shipment of tools, that, while practically settled, is still a matter of annoyance, and that is the molders' strike. Several of the larger concerns report that it has been necessary for them to procure what castings they needed from distant points, thus adding to the expense of the manufacture as well as the delay incident to the long time necessary to secure them. The difficulty at present seems to be in securing men who are fully competent to take the places of the strikers. This is being done as rapidly as possible, but in the meantime some one has to suffer. The National Founders' Association, which held its convention here last week, has the matter in hand, and is doing all in its power to consummate an early settlement.

Longview Hospital, one of the institutions of the county, has made application to the County Commissioners asking for authority to issue $50,000 in bonds for betterments needed. The resolutions recite that the heating plant in the main building has been in use for more than 40 years, and is of ancient pattern, and is entirely inadequate to the needs of the institution. In addition to the heating plant required, there is a demand for a complete new laundry outfit, to install in the new building that has been erected for laundry purposes.

Cincinnati is to have in the near future a new valve company. This company was recently incorporated with a capital of $50,000. The officers are: D. T. Williams, president; F. X. Pund, vice-president; J. W. Tarbell, treasurer; F. L. Swanberg, secretary, and W. J. Munster. They have secured the building at Broadway and Eggleston avenue, where they will manufacture valves and lubricator cups. Mr. Williams was for a number of years connected with the Lunkenheimer Company, and is well known. They will equip the new plant outright, and will need considerable machinery in this line.

The Lodge & Shipley Machine Tool Company reports that it is well pleased with the turn of affairs. Domestic trade is excellent, and all conditions are good for an active wind up of the year. Outside of the delay and inconvenience in securing castings, the company reports no complaint to make.

The Cincinnati Milling Machine Company states that last month was one of its largest, with November running very close in sales made. It is employing nearly as many men in its shops as during boom times, and says that inquiries are plentiful.

The John Steptoe Shaper Company is about to place on the market its 20 and 25 inch back geared crank shaper, driven by Morse chain, and using a 3 and 5 horse-power Crocker-Wheeler motor. These shapers will have speed variations of 70 to 285 revolutions for driving shaft. Business is fair, but not so good as it was during the summer months, at which time the company was doing a large business, when all around was comparatively quiet. Inquiries, however, are picking up, and a demand for larger machines is making itself felt.

The R. K. LeBlond Machine Tool Company is running a full force 75 hours per week, and reports having all that it can possibly do. This movement is principally from domestic sources, and is widespread and general. It seems to this company that everything indicates a return of good times, and that the movement is to be one of gradual strength and growth.

The new plant of the Oesterlein Machine Company has progressed as high as the seond floor, and it will be occupied by January 1 if no serious delay occurs. What tools are required for immediate use have been secured, but later in the year the company will probably install some new machinery. Its new design of cutter grinder has found a ready sale; in fact, so much so that the first lot constructed was sold without any special effort being made in that direction. Business is reported to be much improved, and the company is very anxious to get into its new shop where the facilities for handling work will be largely augmented.

The American Tool Works Company reports trade in motor driven machinery for South America points on the increase. Great Britain is also coming in for its share, while domestic inquiry is generally active. The month of October, so far as actual business transacted is concerned, was the best of the year, and taking all things into consideration a fairly normal state prevails.

The J. M. Robinson Mfg. Company is feeling the increased stimulus of the market. Two large toggle presses went forward to Winnipeg, Man., and Montreal, Quebec. The company is now constructing one of its large 8-foot machines for bending 5-16 inch plate for a concern in Chicago, and a 10-foot toggle press for making sheet metal step ladders for the same point. It was among the first to notice any movement in the building line, as an increased demand is made for cornice machinery.

The John H. McGowan Company reports quite an active market for tobacco machinery. This may be said to apply also to the demand for pumping outfits, as in many places during the past year the failure of natural water supply has necessitated added facilities in this direction.

Schumacher & Boye are in line with the other lathe manufacturers, and are turning out considerable work. This condition has prevailed with them for several months, and both foreign and domestic shipments are unusually good.

The Cincinnati Punch & Shear Company finds both inquiries and orders much improved, especially during November. The outlook at present is certainly good. Among its more recent shipments have been a double punch for the Interborough Rapid Transit Company of New York City, special power punch shipped to Williamston, N. C.; a carload shipment to Bee Mfg. Company of Louisville, one heavy multiple punch, a gate shear and a 72-inch power bending roll to Williamsport Clutch & Pulley Company; carload shipment to Norwalk Iron & Steel Company, one heavy deep throat punch for New York Edison Company. It also has under construction for export one 42-inch throat heavy motor driven punch and one heavy 12-foot bending roll, motor driven also, as well as several other good domestic orders.

The New York Machinery Market.

NEW YORK, November 30, 1904.

General conditions are unchanged from last week. The improved feeling as to the business situation continues. Fresh evidences pointing toward an active revival of trade early next year are constantly coming to the attention of the trade. The heavy purchases of machine tools for an account believed to be the Japanese Government continues. There is also considerable purchasing going on in railway supplies and construction materials, which it is generally supposed is also being made by the Japanese Government. Purchases of shipyard equipment are also being made by the same interests. Foreign business as a whole is very much improved.

As for domestic demand, a feature which is claiming the greatest interest is the apparent activity of the railroads in the vicinity of New York in the direction of the electrification of their suburban lines. The great success which attended the recent trials of the electric locomotive produced by the General Electric Company is doubtless accountable for the situation. It now looks as though before a very great while all of the suburban traffic in this vicinity will be handled electrically. The plans of the New York Central and New York, New Haven & Hartford interests, which we have noted from time to time, are now being extended in their scope very considerably. The Erie Railroad also has plans for equipping the lines near New York electrically and is now sending inquiries to the trade with a view to ascertaining the cost of the contemplated improvements. The present intention of the company is to electrify the Greenwood Lake and Northern Railroad of New Jersey divisions and the main line as far up as Suffern. The Lackawanna officials are also having plans prepared along similar lines, but have done nothing as yet in the way of seeking information in the machinery trade concerning the cost of power station equipment. It is possible that the Erie and Lackawanna systems will join in a Hudson River tunnel and New York terminal project.

The work of the Pennsylvania-Long Island scheme is being rushed with the utmost haste, and in this connection the concerns which have received orders for equipping the power station at Long Island City are now receiving notices to hasten deliveries as much as possible.

It is reported that the New York Central Railroad will begin work at once to equip its New York & Harlem branch with electricity, instead of waiting a year, as at first intended.

The fact that the New York & Westchester Company has now received its franchise is causing the trade to follow this project closely with a view of soon seeing plans and specifications for another big electric station.

W. P. Coleman of the Canada Car Company, the new organization which is to build extensive pressed steel car works at Montreal, is now in New York City, making his headquarters at the offices of the Pressed Steel Car Company, 24 Broad street. Among other things Mr. Coleman is looking into the subject of machinery equipment for the new plant. A general description of this project, showing its scope, was printed in *The Iron Age* of November 3, page 25. In view of the fact that Canadian interests figure very largely in the financial affairs of the company, it has been decided to purchase as much of the equipment for the new plant as possible in Canada. There are a number of machines, however, which it will be necessary to secure in this country, particularly those of the types designed here specially for the McKees Rocks plant of the Pressed Steel Car Company. A small amount of the equipment, we understand, has already been secured, part of the machinery having been purchased in Canada and a portion of it in this country. It is expected that in a very short time rather extensive purchases will be made. Dispatches from Montreal this week state that the stock of the Canada Car Company has been many times over subscribed, and that the total issue will be divided among three groups of interests. These are headed, respectively, by Mr. Coleman of the New York and Pressed Steel Car interests, F. W. Morse of Montreal, representing the Grand Trunk Pacific Railway interests, and Senator Cox and Toronto capitalists. The work of equipment of the Grand Trunk Pacific Railway will furnish immediate business for the new car company, and it is rumored that the contract for a large amount of rolling stock has already been negotiated by these parties. In this connection it is interesting to note that the contract between Speyer Bros. of London and the Grand Trunk Pacific Railway for the financing of the latter property was signed in London this week. This extension of the Grand Trunk system to the Pacific Coast is the largest undertaking in railroad building now on foot in the northern part of the American continent. When completed the new route will be the most northerly road across the Continent from the Atlantic to the Pacific ocean. It will open up vast areas of fertile land, which will add millions of bushels to the wheat crop of Canada, and will be the shortest route from England to Asia via ports that are open all the year. It is expected to be a formidable competitor of the Canadian Pacific and the American Trans-Continental systems now included in the Northern Securities merger. The eastern terminus of the road is Moncton, in New Brunswick, and its western terminus will be at or near Port Simpson, British Columbia.

The news that an agreement has practically been reached between the Otto Gas Engine Company, Philadelphia, Pa., and the city of Wilmington, Del., whereby the former company will be granted a franchise for supplying the city with gas, has been received in the trade with considerable interest. The reason for this is that as soon as an agreement is reached in this matter, the Otto Gas Engine Company will construct its projected new engine building plant at Wilmington, Del. The trade has been following this company up for many months, as the tip has generally gone about that the company intends erecting a very large new plant for the building up of its gas engines. The gas producing feature of the programme has been precipitated through failure on the part of the Otto Company and the present gas interests of Wilmington to arrive at an arrangement whereby the Otto Company may obtain the large quantities of gas required in their work. As a result of this failure, the Otto Company has decided to build its own gas producing plant and enter in competition with the present gas interests of Wilmington for supplying that municipality. It is believed in the trade that the granting of the franchise will bring this controversy to a close, insuring the immediate location of the new engine plant, whether the present plan will be carried out or the gas interests will succumb to the Otto Company's original demands.

Efforts are again being made to revive the project of constructing a great filtration system in connection with the water supply of New York City. Engineers of the Aqueduct Commission, under the direction of Chief Engineer J. Waldo Smith, have practically completed their report on the proposed municipal filtration plant to connect with the Jerome Park Reservoir. Their report will be laid before the commission early next week. In the meantime all work on the easterly half of the reservoir has been suspended pending the decision on the part of the commission as to whether the city will take up the proposition. The present scheme is to provide a system somewhat similar to that being built by the city of Philadelphia, which it will be recalled has cost that city something like $22,000,000. The New York filtration scheme would apply to the entire Croton water shed, and ending with the Jerome Park Resorvoir as the last reservoir before entrance is effected to the city proper by the mains of the water system. The present plans contemplate sand filtration.

The Cheswick Mfg. Company, Cheswick, Pa., manufacturer of agricultural, pressed steel and hardware specialties, whose plant was recently destroyed by fire, has decided to build an entire new plant at another location. The company contemplates rebuilding immediately, and is now looking for a new site, either in a town within 25 miles of Pittsburgh or in the States of Ohio or Illinois. The company is the recipient of negotiations from a number of towns offering it a free site and a bonus as inducements to locate within their limits. The company is now seeking similar proposals from other towns within the radius mentioned. It is intended to erect a building at once, which will be about 80 x 200 feet, and giving employment to about 100 men. Plans for the new shop are being prepared and a list of the machinery required is now compiled. This list will include a number of grinding machines, lathes, drill presses and shapers, together with other miscellaneous machine tools; also a 250 horse-power water tube boiler and a 200 horse-power engine. The company will also be in the market for a 30,000-gallon tank, with steel substructure and a complete electric light plant having a capacity of about 150 lights. A quantity of conveying machinery will also be required.

The Philadelphia Iron Works, now located at Eighteenth street and Pennsylvania avenue, Philadelphia, Pa., has about completed negotiations for the purchase of 5 acres of land near Fort Washington, Pa., where an extensive modern boiler and tank plant will be erected. Plans for the new works are now being prepared and within a short time specifications will be issued for the necessary machinery equipment, which will include a number of heavy machine tools for the manipulation of plate and sheet metals. The company makes a specialty of steel chimneys, stand pipes and plate metal work for breweries, sugar houses, &c., also stationary and marine boiler work. James Thompson will be in charge of the new works.

The Kinnear-Hood Steel Company, 141 Broadway, New York, which is to move its pressed steel radiator plant from Newark, N. J., to larger and more commodious quarters at New Britain, Conn., is now sending inquiries to the trade for a small amount of machinery equipment. It will be recalled that President Howard S. Hart of the Russell & Erwin Mfg. Company and President Charles Glover of the Corbin Screw Company, both of New Britain, are taking an active interest in the company. It is expected that in a short time purchases on a rather extensive scale will be made for the new plant.

O. L. Remington, a representative of Wm. McLean & Co., merchants and manufacturers' agents, Melbourne, Australia, has just passed through this country *en route* to England and the Continent. Mr. Remington will be in New York again about December 21, and will stop over for several days on his return to Australia. The purpose of his visit is to open negotiations with any manufacturers desiring an Australian connection, and having lines of merit to offer. His company handle exclusively in Australia products of such concerns as the Bullock Electric Company of Cincinnati, Ohio; the Wagner Electric Mfg. Company of St. Louis, the Columbia Incandescent Lamp Company, St. Louis, and Robbins & Myers, Springfield, Ohio. While in New York Mr. Remington can be reached, care of the Astor House.

An arrangement has been made by the Watson-Stillman Company with Pedrick & Ayer of Plainfield, N. J., whereby the former company can carry on sufficient work at the Plainfield plant to compensate for any loss of capacity occasioned by the recent fire which partially destroyed the Watson-Stillman plant at Aldene, N. J. This arrangement will enable the company to not only fulfill all present contracts without interruption, but also to continue its business with the same capacity as given by the plant prior to the fire.

It is expected in the trade that the United States Radiator Company will soon be in the market for machinery equipment, in view of the fact that it has just closed a contract for building a large addition to its plant at Dunkirk, N. Y. Work on this addition is to be put through with the utmost speed, as the company wishes to obtain a much larger output from this plant for its next season's trade.

A 500-barrel cement mill will be built for the Ashland Iron & Mining Company, Ashland, Ky., by C. J. Curtin, in association with the Ruggles-Coles Engineering Company, 39 and 41 Cortlandt street. Blast furnace slag will be used in the manufacture of the cement, and it is expected to have the mill completed in time to meet the demands of the spring trade.

The Cape Fear Lumber Company, Wilmington, N. C., has placed the order for its 500 horse-power engine with the Hoovens-Owen-Rentschler Company, 39 and 41 Cortlandt street.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until December 31 for a 40-ton electric traveling crane for the Puget Sound Navy Yard.

Announcements are being sent to the trade to the effect that the Mickle-Milnor Engineering Company has succeeded to the business of Robert T. Mickle, who for several years has been the Philadelphia representative of the Herron & Bury Mfg. Company, manufacturer of air compressors; H. R. Heinecke, Incorporated, designer and builder of radial hollow brick chimneys, and for the Monarch engine stops. The offices in the Drexel Building will be retained.

The New England offices of the Allis-Chalmers Company in Boston, which are now in the Board of Trade Building, and the offices of its Electrical Department, the Bullock Electric Mfg. Company, in the Journal Building, will be consolidated on December 1, and removed to the State Mutual Building, 50 Congress street. George H. Berg will be the manager in charge of the consolidated offices.

Catalogues Wanted.—The Cheswick Mfg. Company, Cheswick, Pa., which is to build a new plant, as noted above, desires catalogues of general machinery and mechanical accessories to replace the library which was destroyed by a fire which the company recently suffered.

The New York Eight-Hour Law Unconstitutional.

By a decision at Albany on November 29, in the action of the People *ex rel* Cossey, appellant, *vs.* Controller Grout of New York, the Court of Appeals declared unconstitutional Chapter 415 of the Laws of 1897 (the labor law), which prohibits a contractor from employing his men more than eight hours a day on city, county or State work. The action was brought by Harry Cossey to compel payment by the city of New York of $28,215 for six scows manufactured for the Street Cleaning Department. Payment was refused on the ground that he had violated the terms of his contract in employing his men over eight hours a day. Mr. Cossey did not deny this, but contended that the law was unconstitutional. The Court of Appeals reverses the lower courts and grants the appellant's application.

With Judge Haight alone dissenting, the court arrives at this conclusion, but by different routes. Judges O'Brien, Martin and Vann hold that the law is unconstitutional in that it deprives an individual of property without due process of law. Chief Judge Cullen, with Judge Werner concurring, bases his opinion as to the law's unconstitutionality on the result in the Rogers case, making their decision one of precedent.

In his dissenting opinion Judge Haight holds that the constitutionality of the law can be sustained by the fact that it is a police regulation in the interest of public health and morality.

Iron and Industrial Stocks.

NEW YORK, November 30, 1904.

The past week has seen advances on nearly all of the Iron and Steel stocks. In some cases these prices are now up to or above the level of two years since. On Friday the trading in United States Steel Corporation shares and bonds was of enormous volume, reaching nearly 500,000 shares and many millions in value of bonds, and prices made a sharp advance, which was even overtopped on Saturday, since which time some recession has occurred. The common stock, however, showed continued strength, reaching much higher prices on Tuesday and Wednesday of this week. The high point on active stocks up to the close of business on Tuesday of this week was as follows: Can common 11⅞, preferred 57½; Car & Foundry common 34⅜, preferred 93½; Locomotive common 36⅜, preferred 104½; Colorado Fuel 58⅜; Pressed Steel common 41¾, preferred 91½; Railway Spring common 33⅞, preferred 92; Republic common 18¼, preferred 73½; Sloss-Sheffield common 63; Tennessee Coal & Iron 77½; Cast Iron Pipe common 19, preferred 80; United States Steel common 32¾, preferred 95¼, new 5's 95¾. Some of the inactive stocks also showed much activity, accompanied by higher prices. Among these was Virginia Iron, Coal & Coke, which advanced during the period extending from Friday to Tuesday from 33 to 44. The last transactions on active stocks up to 1.30 p.m. to-day were at the following prices: Can common 11⅞, preferred 58⅞; Car & Foundry common 33⅝, preferred 93⅜; Locomotive common 35, preferred 103¾; Colorado Fuel 57; Pressed Steel common 40½, preferred 90; Railway Spring common 33¼, preferred 91½; Republic common 17⅞, preferred 71; Sloss-Sheffield common 61, preferred 102; Tennessee Coal 76⅛; United States Steel common 32¼, preferred 93⅞, new 5's 93⅜.

Stockholders of the Ohio Fuel Gas Company, Pittsburgh, will soon be asked for a special meeting to authorize an increase of capittlization from $4,000,000 to $6,000,000. The $2,000,000 increase is to provide for the laying of lines for the supply of natural gas to Cincinnati, Ohio, the directors having decided to invade that field because of the enormous supply of gas owned by the company, which now operates in and around Central Ohio. The company pays 10 per cent. dividends on its $4,000,000 stock, par being $25.

Dividends.—Alamaba Consolidated Coal & Iron Company has declared the regularly quarterly dividend of 1¾ per cent. on the preferred stock, payable December 1.

The American Brake Shoe & Foundry Company has declared a dividend of 1 per cent. on the common stock in addition to the regular quarterly dividend of 1¾ per cent. on the preferred stock.

Westinghouse Electric & Mfg. Company has declared a quarterly dividend of 2½ per cent. on the preferred stock, payable January 10.

The open hearth capacity of the Sharon Steel Hoop Company, Sharon, Pa., is being increased by the addition of another furnace. The company intends to increase the size of its four present open hearth furnaces, which are of 25 tons capacity each, and eventually expects to have an annual output of at least 90,000 tons of steel.

The Tennessee Supreme Court on November 26 held as constitutional an act of the Legislature of 1891 relative to the nonliability of certain corporations from damage alleged to accrue to vegetation from smoke from copper roasting ovens. The decision is in favor of the several copper companies of Ducktown, Tenn. The Supreme Court held that copper ovens are not nuisances, and that damages cannot be recovered as a result of the failure of vegetation to thrive thereabout.

The Standard Steel Car Company, Pittsburgh, with works at Butler, Pa., has just delivered the first all steel baggage car ever built to the Erie Railroad. Railroad men from all parts of the country have been in Butler inspecting the new car, and pronounce it perfect. The car will be taken to Chicago for exhibition.

A Chicago Foremen's Association in the Metal Trades.

The officers and members of the Chicago division of the National Metal Trades Association are encouraging the formation of a subsidiary association whose membership shall be limited to superintendents and foremen of plants that are members of that association. On December 10 a meeting for perfecting the organization will be held. This new association will be of great value to its members directly and to the firms represented indirectly in that it will bring about close personal and social relations between the members, will discuss modern methods of shop practice, will be able to bring about a clear understanding of labor conditions and will be of great assistance in furnishing practical ideas to the association of employers in the method of handling the labor problem with the least friction. Superintendents and foremen as a rule are men who have graduated from the ranks of labor, and for this reason are more intimately acquainted with the methods of thought and action that prevail or are likely to prevail in labor circles. It is expected that the influence of the superintendents' and foremen's association will be a conservative one, as the members of this association are in a position where they can understand and sympathize with reasonable requests made by the labor bodies. The fact that the personal habits and antecedents of the agitators in the labor organizations are well known to these men and that their careers will be discussed before the meetings will make it difficult for turbulent labor agitators to secure employment in any of the shops represented in association membership. In times of industrial peace the labor question will be subordinated to efforts along the line of education and self-improvement. The preliminary organization is in the hands of C. E. Davis, Goodman Mfg. Company; Wm. Evenson, Goss Printing Press Company, and Joseph Walsh, Link-Belt Machinery Company.

The Eastern Steel Company.

The Eastern Steel Company, which some time since took up the Atkins plant at Pottsville, Pa., has now begun active steps to proceed with the further improvement of the works. There are now nearly completed a steel plant of four 50-ton basic open hearth furnaces with three soaking pits and a plant of gas producers. The 32-inch blooming mill belonging to the old works is being fitted up. It has an equipment of two heating furnaces. There are also in efficient condition for production a 12-inch and a 19-inch mill, which constituted a part of the old plant. When the work in progress in this department is completed it will be possible early in the spring to produce steel billets, if that be considered desirable.

The principal undertaking at the present time, however, is the building of a 28-inch beam mill, the contract for which has been given to Mackintosh, Hemphill & Co., Pittsburgh. The mill will have four stands and will be driven by a reversing engine, also to be built by Mackintosh, Hemphill & Co. There will be added to the new boiler plant of Heine boilers now erected additional boiler capacity which will bring the total up to 7000 horse-power. The new beam mill will be capable of rolling the entire range of sizes up to and including 24-inch. It is estimated that the capacity of the works will be about 120,000 tons of ingots per annum. The crane equipment for the new plant is to be built by the Alliance Machine Company, Alliance, Ohio, and the aim is to have the new mill in operation by about July 1, 1905.

There is in existence the bridge shop of the old company, which will be put into use, but it is expected that it will be considerably increased in capacity by the building of a new bridge plant. Then a capacity of 25,000 tons of fabricated material per annum will be attained.

The officers of the new company are: Veryl Preston, president; James A. Burden, Jr., vice-president; T. R. Foley, treasurer; Edward L. Herndon, secretary, and A. H. Beale, general manager. The main office of the company is now and will remain at Pottsville, Pa., there being a branch office at 71 Broadway, New York.

The Employers' Association of Cincinnati.

On the evening of November 22 the Employers' Association of Cincinnati and vicinity gave its first dinner, at the Business Men's Club. There were about 300 manufacturers and guests present and a profitable evening was spent. After the dinner A. H. Pugh, president of the association, in a neat speech introduced Chas. Walz, the secretary, who gave a most interesting report. Mr. Walz dwelt upon the several strikes that have occupied the attention of the association during the year, closing with a complete account of the molders' troubles that are still causing considerable anxiety. Mr. Marshall of Dayton, Ohio, was the next speaker, and told how in Dayton, as a result of the Employers' Association, they have had three years of uninterrupted peace and quiet, and that they fully expected a continuance. Chas. Williams, the attorney of the association, spoke of his connection with it, and also gave a full account of the developments in the recent trouble at the Eureka Foundry, which resulted in the arrest of five men, including Joseph Valentine, the president of the Iron Molders' Union of North America.

National Metal Trades Association Notes.

CINCINNATI, OHIO, November 28, 1904.—The next annual convention of the National Metal Trades Association will be held in the city of Chicago on March 23 and 24. This meeting will be immediately preceded by a session of the Administrative Council. Upon recommendation of the Finance Committee, the rate of assessment for the next quarter was fixed at 15 cents per month per operative receiving 20 cents per hour, and 7½ cents per operative receiving less than 20 cents per hour. The increase in membership since the adoption of the amendment to the constitution and by-laws decreasing the initiation fee to $25 and through the reputation gained by the association's work in Chicago is extremely gratifying.

The Executive Committee of the Worcester Metal Trades Association met on the 25th inst. The matter of a new uniform bill of lading which is to go into effect on January 1 was given serious consideration.

The regular monthly meeting of the New York Metal Trades Association will be held at 3 p.m., December 8, at the association's rooms. A special meeting of the Executive Committee will be held at two o'clock of the same day. H. C. Hunter, the secretary of this association, reports the labor bureau in a flourishing condition.

It is reported that the American Federation of Labor, now in convention in San Francisco, has assigned all stack work to the boiler makers.

W. C. Gentry, secretary of the Manufacturers' Association of Pittsburgh, reports 40 more men employed than discharged last week, and also that business generally shows quite a decided improvement.

The meeting of the St. Louis Metal Trades Association, which was to have been held November 23, was postponed until the 29th. Commissioner Eagan addressed the meeting. All of the foundries in that city are reported as running smoothly and the situation is one of quiet.

Robert Wuest, secretary of the association, leaves for St. Louis and Chicago on the 29th.

Word has been received from H. M. Leland, chairman of the tenth district, Detroit, that there is a likelihood of the association becoming involved in a strike of the polishers and buffers, which may occur in that city this week. Commissioner Eagan deemed it advisable to call a meeting of the tenth district committee, and left to attend it on the 27th.

Wm. H. Burtner, president of the Cincinnati Planer Company, has disposed of his interest in that company to C. H. M. Atkins of the Warner Elevator Company, who will succeed Mr. Burtner as president.

PERSONAL.

Jacob Langeloth, president of the American Metal Company, New York, has been elected president of the Granby Consolidated Mining, Smelting & Power Company of British Columbia.

Samuel M. Vauclain, superintendent of the Baldwin Locomotive Works, Philadelphia, will read a paper on "Rolled Steel Car Wheels" before the Franklin Institute on December 1. Strickland L. Kneass of Wm. Sellers & Co., Incorporated, will speak on "Bronzes for Steam Uses" on the same evening.

Louis M. Henoch, general sales agent of Joseph T. Ryerson & Son, iron and steel merchants, Chicago, has been elected secretary of the company, succeeding Clyde M. Carr, who has been made vice-president. Edward L. Ryerson is president and treasurer.

Dr. Louis Duncan, who is known throughout the scientific world for his attainments in electrical work, is another of the prominent men who have become associated with the staff of the Allis-Chalmers Company, Milwaukee, Wis. He has been retained by the company as an expert in electrical patent work in connection with its electrical department, the Bullock Electric Mfg. Company, Cincinnati. This connection has only recently been made possible by the retirement of Dr. Duncan from the chair of electrical engineering at the Massachusetts Institute of Technology, to which he was appointed in 1892. Finding that it would be impossible to do justice to the institute unless he gave up his constantly growing business as a consulting engineer and expert, Dr. Duncan decided to resign his chair. He will continue to make his headquarters in New York, at 56 Pine street, where he will be closely in touch with the legal and executive officers of the Allis-Chalmers Company.

Pietro Redaelli, proprietor of a large iron and wire works at Lecco, Italy, and member of the Iron and Steel Institute, is spending some time in America studying methods of production. While in the West he visited plants of the Grand Crossing Tack Company, the American Steel & Wire Company, the International Harvester Company and other industries in and about Chicago.

William Morris, auditor of costs at the Bessemer plant of the Republic Iron & Steel Company, Youngstown, Ohio, has been appointed to the same position at the company's Brown-Bonnell mill, in succession to John Taylor, who has accepted the position of chief clerk of the forge department of the American Car & Foundry Company, Detroit, Mich.

J. H. Schurtz, president and general manager of the National Valve Works, Sandusky, Ohio, has sold his interest to J. F. Williams, who has assumed charge of the business. The company expects to secure additional capital and enlarge the scope of its business.

These have been elected as directors of the Shannon Copper Company, Clifton, Ariz.: Charles F. Brooker of the American Brass & Copper Company, A. A. Cowles, president of the Ansonia Copper Company, and B. Hochschild, treasurer of the American Metal Company.

Henry Phipps has returned from Europe.

Lewis C. Milholland has resigned the vice-presidency of the Maryland Rail Company, Cumberland, Md., and has sold his interest in the concern to Thomas F. Shannon, who was elected vice-president to succeed Mr. Milholland. Mr. Shannon was formerly secretary of the Rarig Engineering Company of Columbus, Ohio.

W. C. Porter, formerly superintendent of the Sharon works of the Carnegie Steel Company, at Sharon, Pa., has been appointed general superintendent of the open hearth plant of the Birmingham Steel & Iron Company, Birmingham, Ala.

Howard T. Wallace and James P. Winchester, receivers of the Diamond State Steel Company, have been discharged by the United States District Court at Wilmington, Del. The Court gave notice that in ten days bankruptcy proceedings against the company would be dismissed.

OBITUARY.

CHARLES SCOTT, formerly president of the Charles Scott Spring Company, Philadelphia, Pa., died on November 24, in that city, aged 76 years. He was born in Ireland and came to this country as a child. He entered business life as an employee in the hardware business of W. T. Wilstach, in Philadelphia, remaining there until 1865, when he formed a partnership with Conrad B. Day for the manufacture of steel car springs. In 1876 he organized the Charles Scott Spring Company, which was absorbed two years ago by the Railway Steel Spring Company, of which Mr. Scott was a director at the time of his death. He was prominent for half a century in the business, charitable and religious life of Philadelphia.

HOWARD S. COLLADAY, who was associated with his father, David Colladay, in the manufacture of wood working machinery in Philadelphia, died November 23, of pneumonia, aged 33 years.

G. FRANK DECK, a member of the firm of Deck Brothers, brass founders, Buffalo, N. Y., died November 18 after a long illness, aged 65 years. He was born in Germany and came to this country as a child, his parents settling in Buffalo, where Mr. Deck passed the whole of his life. He was interested in many local institutions.

JOHN E. THROPP, formerly head of the iron firm of John E. Thropp Sons Company, Jersey City, N. J., died suddenly November 25, at his home at Titusville, N. J., aged 82 years.

GEORGE EDGERTON BURPEE, Bangor, Maine, a prominent civil engineer, died November 24. He was born in Sheffield, New Brunswick, in 1834, and after graduating at the University of New Brunswick took up civil engineering, railroad work being his specialty. He figured in the building of a number of railroads, and was chief engineer in the building of the line from Bangor to St. John, N. B., and for a time was chief engineer of the European & North American Railroad.

JOHN L. SIMPSON, secretary of the Michigan Sprocket Chain Company and purchasing agent for the Michigan Malleable Iron Works, died recently in Detroit, Mich., aged 50 years.

HARVEY HAMILTON WELCH, for some years superintendent of the plant of the Westinghouse Air Brake Company at Wilmerding, Pa., died suddenly November 22. Mr. Welch had been connected with the Westinghouse Air Brake Company for many years and was highly regarded by his business associates.

JAMES BARR, superintendent of the plant of the Finished Steel Company, Youngstown, Ohio, maker of steel shafting, died last week as a result of a fall into a vat of hot water.

JOSHUA B. LESSIG, a member of the Lessig Brothers Iron & Steel Company, Pottstown, Pa., died suddenly November 21 of heart disease. Beginning life as bricklayers, Mr. Lessig and his brother, George B. Lessig, became among the largest iron manufacturers in the Schuylkill Valley. Mr. Lessig was for many years treasurer of the old Ellis & Lessig Iron Company.

WILLIAM HEYWOOD, general manager of the Pennsylvania Iron Works, Philadelphia, died suddenly November 14 from cerebrospinal meningitis, after a few days' illness. Mr. Heywood was born in England and came to this country 20 years ago, engaging in his profession as engineer in New York, Pittsburgh and Philadelphia. He was at one time chief engineer of the Baltimore Iron

WILLIAM H. BLYMYER, president of the Blymyer Building Company, died last week at his home in Chicago of kidney trouble. He was born at Mansfield, Ohio, and was about 70 years of age. At one time he was a member of the firm of Blymyer Bros. & Co. of Mansfield, where they conducted a large foundry. In 1870 he removed to Cincinnati and established the firm of Blymyer, Norton & Co., manufacturers of sugar machinery. This was merged into the Blymyer Mfg. Company, now in business on Spring Grove avenue, Cincinnati, although for several years Mr. Blymyer has had no connection with the firm.

New York.

NEW YORK, November 30, 1904.

Pig Iron.—There has been quite a good run of orders and some good sales of Pig Iron to Pipe manufacturers have been made, the tonnage aggregating about 15,000 tons. There is further business estimated at about 10,000 tons pending. There is some inquiry, too, for Basic for the first half of next year. The market closes strong at $16.50 to $16.75 for No. 2 X Foundry, $15.75 to $16.25 for No. 2 Plain Foundry, Northern brands, tidewater delivery. We quote Southern Pig $16.75 to $17.25 for No. 2.

Steel Rails.—Gossip has it that the Lackawanna Steel Company has accepted an allotment of 15 per cent. as its share in the pool for 1905. It is certain that adjustments have made progress in the last week, and that a price policy will be announced at an early date. The market remains at $28 for Standard Rails. The market is higher in Light Rails, and for spring delivery $21.50 to $22 is now quoted as a minimum.

Cast Iron Pipe.—Business is still coming in very satisfactorily. The predominant feature of the trade is the buying of consumers for spring delivery. The demand is not confined to special localities, but is of a general character. Foundries are now so well supplied with orders that their capacity is covered well into next year. Prices are not held open for any length of time, but are only named for early acceptance. Among the lettings in the near future are Providence, R. I., December 1, 1800 net tons, and Holden, Mass., December 8, 1100 net tons. Carload lots are quoted at $26.50 per net ton for 6 to 10 inch at tidewater.

Finished Iron and Steel.—Inquiries for bridge work are increasing, and it is expected that they will result in the placing of a great deal of business at an early date, but the tonnage actually secured during the past week was not very heavy. Among the orders secured by the leading interest were 2700 tons from the Louisville & Nashville Railway Company, 1500 tons from the Buffalo & Susquehanna, and a number of smaller contracts from the Lake Shore, Michigan Central, Missouri Pacific and other lines. Prices on fabricated work are still remarkably low, the more so as probabilities point strongly to an early advance in Structural Shapes and Steel Bars. The building trade continues quiet. While the demand for Plates is confined to small orders, the aggregate now being booked makes a very good tonnage for the mills. The consumption of Plates is undoubtedly increasing. Business offered for export is quite large, but the independent mills are passing it now, as the domestic trade is so much more attractive. The feeling is quite confident that an early advance will be made in Plate prices. Bar Iron manufacturers report an active demand, notwithstanding the fact that their prices are much higher than those asked by the makers of Steel Bars. The advancing cost of raw material makes the Bar Iron market very firm. The position of the Steel Bar trade is shown by the fact that large manufacturers are refusing to book orders over 100 tons, which indicates the expectation of an advance in prices. Quotations at tidewater are as follows: Beams, Channels, Angles and Zees, 1.54½c. to 1.80c.; Tees, 1.59½c. to 1.80c.; Bulb Angles and Deck Beams, 1.64½c. to 1.85c.; Sheared Plates, in carload lots, 1.54½c. to 1.65c. for Tank, 1.64½c. to 1.80c. for Flange, 1.74½c. to 1.90c. for Marine, and 1.74½c. to 2.50c. for Fire Box, according to specifications; Refined Bar Iron, 1.54½c.; Soft Steel Bars, 1.44½c. to 1.50c.

Old Material.—A great deal of the Old Material now being sold by local dealers is being shipped to the Central West, where the supply appears to be under present requirements. No very large lots, so far as can be learned, are being sold to nearby consumers, who are as discriminating in the character of the material they purchase as at any time in the past. Nevertheless, the market is in such condition that higher prices seem imminent. Prices per gross ton in New York and vicinity are approximately as follows:

Old Iron Rails	$18.00 to $19.00
Old Steel Rails, rerolling lengths	15.00 to 15.50
Old Steel Rails, short pieces	13.00 to 14.00
Relaying Rails	19.00 to 20.00
Old Car Wheels	14.00 to 14.50
Old Iron Car Axles	20.50 to 21.00
Old Steel Car Axles	17.00 to 17.50
Heavy Melting Steel Scrap	13.00 to 13.50
No. 1 Railroad Wrought Scrap	17.00 to 17.50
Yard Wrought Scrap	14.00 to 14.50
Iron Track Scrap	15.00 to 15.50
Wrought Pipe	11.50 to 12.00
Ordinary Light Iron	10.00 to 11.00
Cast Borings	7.00 to 7.50
Wrought Turnings	9.50 to 10.00
No. 1 Machinery Cast	13.00 to 14.00
Stove Plate	11.00 to 11.50

The Westinghouse Electric & Mfg. Company, Pittsburgh, has secured a contract from the Eastern Electrical Construction Company, Baltimore, for a large amount of electrical equipment, consisting of two 3000 horsepower steam turbines and two 2000-kw. turbo-generators, with the necessary switchboards and equipment.

Metal Market.

NEW YORK, November 30, 1904.

Pig Tin.—Since our last report the market has fluctuated violently. The advance in price was most marked on Friday last, when the high figures prevailing at the Banca sale in Holland caused a flurry in London and a corresponding raising of prices here. The Banca sale went at a price 1¾ florins above the quotation of the previous Monday, or at the equivalent to 29.65c., c.i.f. New York. The advance in London continued right on until yesterday, when £136 15s. was reached. To-day a reaction came and the price receded to £136 for spot and £134 15s. for futures. This market reached its highest point yesterday with 30c. for spot, but the reaction also set in here to-day, the market closing 29.80c. for spot and futures. The total arrivals for the month amount to 2205 tons, while 1730 tons are afloat.

Copper.—The market is quiet and unchanged. Lake is still quoted 14.87½c. to 15.12½c. Electrolytic is quoted 14.75c. to 15c., and Casting Copper is unchanged at 14.50c. to 14.75c. The London market has advanced over the quotations of a week ago. At this writing the cables name £67 3s. 9d. for spot and £67 12s. 6d. for futures, while Best Selected has advanced a full pound, to £71. In support of the belief held in most parts of the metal trade this month, the exports are showing a considerably smaller total than last month. There is still another day to be heard from, but from the figures available to-day it can safely be assumed that the exportation for the month of November will fall at least 6000 tons below the total of the month previous. To-day the total stands 17,932 tons.

Pig Lead.—The market is quiet and unchanged. Spot Lead in New York is firm at 4.60c. to 4.70c. Offerings from the West are very light, and the St. Louis market is unchanged at 4.40c. The American Smelting & Refining Company continues to quote on a basis of 4.20c. for "shipment" Desilverized in 50-ton lots. The London market is slightly lower than last week, at £12 18s. 9d.

Spelter.—The market for Spelter is still firm, but very quiet. Demand is fairly good and supplies are still light. Spot Spelter was quoted to-day at 5.75c. to 5.87½c. The St. Louis market has stiffened again, and is quoted at 5.55c. London cables show a decline, quoting £24 17s. 6d.

Antimony.—The demand for Antimony is active and supplies are scarce. The market closed very strong, with Cookson's quoted to-day at 9.50c. to 10c., Hallett's at 9c. to 9.50c., and other grades at 8c. to 9c.

Nickel.—The usual amount of business is passing and prices are nominally quoted for large lots at 40c. to 45c. and smaller quantities at 50c. to 60c.

Quicksilver.—The market remains the same as last week, flasks of 76½ lbs. being quoted at $40. London is unchanged at £7 15s.

Tin Plates.—The market is unchanged in every respect. The American Sheet & Tin Plate Company quotes $3.64 per box, f.o.b. New York, for 14 x 20 100 lb. Coke Plates, or $3.45, f.o.b. Pittsburgh. The Swansea market has advanced 4½ pence, to 12 shillings 6 pence.

Recent Decisions in Customs Cases.

The Board of United States General Appraisers handed down a decision on November 29 sustaining a protest by F. W. Myers & Co., customs brokers, Plattsburg, N. Y., against the classification of concentrated copper ore as a nonenumerated manufactured article at 20 per cent. The importer claimed that it was free of duty under the provision for copper ore. The decision of the board is written by General Appraiser Fischer, who says: "The concentration of the ore did not remove it from the category of copper ore, for although impurities were to some extent eliminated by the process, the article still remained copper ore."

General Appraiser Fischer is also the author of a decision overruling a protest by W. H. Allison of Detroit against the classification of certain iron castings at 8-10 cent a pound as castings of iron not specially provided for in the act, instead of at 45 per cent. as claimed as nonenumerated manufactures of metal. In a special report to the board the local appraiser states that he made a personal examination of the merchandise and that he found the castings to have had "work done on them in the machine shop either by reaming, boring, planing, polishing, or some other process."

A third decision by Mr. Fischer partially sustains protests by W. Green & Co. of New York against the duties assessed on an importation of files, gauges and metal springs. The board finds from the testimony and

the samples admitted in evidence that item 155 covered files which were returned at 50 cents, which return was admitted to be in error, the files measuring less than 2½ inches, and hence dutiable at 30 cents per dozen; that item 245 covered articles made of brass and wood, used for ascertaining the gauge of watch glasses, hence called, as on the invoice, "glass gauges," dutiable properly at 45 per cent., as claimed; that items 187 to 204, inclusive, invoiced as "ressorts musiques," were steel springs equally suitable for use in clocks and music boxes, covered by the provisions of paragraphs 191 and 453, both of which being equally specific, the articles are dutiable at the higher of the two rates by virtue of the provisions of section 7; that the remaining items of files were of the measurements as returned by the appraiser, and were correctly assessed.

The board also, in a decision written by Mr. Fischer, sustained a protest by the Stone & Downer Company, Boston, against the classification at 45 per cent. as manufactures of metal of merchandise returned by the appraiser as iron and steel welded together. The official analysis showed that the goods were ingots of hard and mild steel welded together. On this report Mr. Fischer rules that they are properly dutiable at various specific rates, according to value, under the provision for steel ingots.

The Warrant Market.

Pig Iron merchants are following more closely the sales of warrant certificates in the New York Produce Exchange, the market for which has during the past week developed more activity and a stronger tone. A significant feature was the disposition of a greater number of members to trade in Iron certificates, the buying being more scattered than previously. The selling, however, was mostly done by L. K. Hirsch, who sold in all about 1000 tons, and C. C. Wheeler, who sold upward of 500 tons, out of the total transactions of 2000 tons. January delivery, 100 tons, were sold at $17.40, the price later advancing to $17.50, at which 600 tons were traded; in February delivery 200 tons were sold at $17.45; March, 100 tons at $17.50, and 100 tons at $17.55; April, 100 tons at $17.05; in May delivery 100 tons were sold at $17.40, 100 tons at $17.50, 100 tons at $17.55, 200 tons at $17.60, 100 tons at $17.65, the price dropping at Wednesday morning's call to $17.50, at which 100 tons were sold: July delivery 100 tons were sold at $17.55.

More brands of Iron are constantly being added to the list for which certificates are sold, and at the present time Iron may be bought on the exchange which is in storage at about all the principal shipping points in the country. The Pig Iron Committee has nearly completed and will send out within a few days a table of differentials giving the location of the furnaces, various qualities and grades of Iron and the differential between the values and standard Foundry Iron No. 2 at New York, the basis upon which transactions are made.

Quotations at noon Wednesday were:

	Bid.	Asked.
November	$17.00	....
December	....	$17.50
January	17.25	17.40
February	17.35	17.40
March	17.30	17.50
April	17.30	17.50
May	17.45	17.50
July	17.05	17.50

Increasing Pig Capacity.—The United States Steel Corporation will during December blow in six additional blast furnaces, including one at South Sharon, one at New Castle, two at Edgar Thomson, one at Niles and one at Donora.

The William B. Pollock Company, Youngstown, Ohio, builder of blast furnace and steel work and heavy steel plate construction, will make a large addition to its plant. The main building, which is now 272 feet long by 120 feet wide, will be extended 192 feet, and a large amount of new machinery will be installed.

No. 3 blast furnace of the Carnegie Steel Company, at South Sharon, Pa., has been started up, the three blast furnaces at this plant now being in operation. All of the 12 50-ton open hearth furnaces at these works are now in operation for the first time in more than a year.

Discharging Nonunion Men After Strike Settlements.

President Eliot of Harvard University, in the course of an address to the Economic Club of Boston, made an analysis of the objects of the new Employers' Association of that city, and, in commenting upon the object, entitled "No sacrifice of the independent workman to the labor union," stated: "I need not say that employers have until times still recent neglected extraordinarily the observation of the principle here stated. Here in Boston, for instance, we have seen strikes in industries the continuity of which was very important to the owners, nonunion men called in to occupy the factories in spite of the strike, but in a few weeks the strike was settled, all the nonunion men that had been called into the factories had been driven out and the entire body of strikers reinstated. We have seen that repeatedly. Now is it not clear that such a policy as that on the part of employers works directly in restraint of liberty? Is it not clear that it is the duty of every employer suffering from a strike not only to protect every man that comes to his help, but to make sure that that man continues to be employed? Is it not sure that one of the great causes of the frequency of strikes for trivial reasons—very trivial reasons even—is the belief on the part of the strikers that they are only to be out a week or a few weeks, or, at the worst, a few months, and they would all return to their jobs?"

There is a great deal of truth in what Dr. Eliot says. Yet it frequently happens where skilled labor strikes that to carry out the theory he lays down is entirely inexpedient, not because of the fault of the employer, but because of the inefficiency of the nonunion workmen. In times of prosperity, when labor is in great demand, to fill a shop where a strike has been declared means accepting many men who are either unskillful or unreliable. If the strike continues long enough an efficient force may be procured by weeding out the new hands, getting rid of the worst of them and training those who have aptitude but too little skill. And when such a strike finally breaks some of the old hands will find their places gone, and they will have to return on a nonunion basis. But, as President Eliot says, the custom has been too general to hire nonunion workmen to take the places of the strikers, and, when the strike is ended, discharge all the nonunion hands as one of the conditions of the truce with the union. The union realizes this and thrives on it. If, on the other hand, when the members of a union have good ground for fear that if they go on strike it will mean the permanent loss of their places, they are slower to strike, especially when the bone of contention between them and their employers is some such trivial matter as is the cause of the great majority of strikes to-day. Employers are realizing this more and more, and union members are aware of the change in conditions. More important still, the army of nonunion workmen is growing stronger.

Gorham C. Parker has resigned his position as manager of the Superior Tap Company, manufacturer of taps, dies and screw plates, Springfield, Vt., his resignation going into effect November 1.

The Riter-Conley Mfg. Company, Pittsburgh, builder of heavy steel plate work, has received an order for the building of an immense hydraulic power plant at Necaxa, Mexico, which will involve $1,000,000 for the steel work alone. The company secured this contract through its president, Thomas B. Riter, who is now in Mexico. From 3000 to 4000 tons of steel will be required for the work.

Theodore J. Shaffer, president of the Amalgamated Association, announces that he will not be a candidate for re-election.

Both the South Chicago and the Edgar Thomson steel rail plants of the United States Steel Corporation will undergo very extensive repairs before being again started up.

HARDWARE.

THE strife for orders which manufacturers are obliged by the exigencies of trade to maintain is one of the influences which tend to bring the large retailer into direct relations with the manufacturers. When competition is very close and margins narrow the small manufacturer, whose facilities are not equal to those of his great competitors, is no longer in a position to secure the orders of the jobbing trade at prices which are, we will suppose, from 10 to 15 per cent. above those charged to the enterprising retail trade. As a consequence, the manufacturer is compelled to pass by his former jobbing customers and go direct to retail merchants and offer them inducements in prices, so that they purchase at figures closely approximating those which the jobbers pay. Sometimes, too, jobbers are forbidden by combinations or pools to purchase from outside manufacturers, under penalty of sacrificing rebates which are offered to them as rewards for good behavior. But whatever may be the character of the difficulty in the way of selling goods to the recognized jobbers, this is one of the influences which oblige manufacturers seeking a market to go out to the trade at large, with whom they usually succeed under favorable auspices in building up a profitable and satisfactory business. There is no doubt that this course has of late been and is still pursued by many manufacturers, who are forced to compete with consolidations or with combinations in close alliance with the jobbing trade and to a good extent in control of the market in their lines. This influence finds many illustrations in various branches of the trade as merchants apart from the regular and recognized jobbers are able to purchase at very close prices. In this way, while the smaller merchants and manufacturers are simultaneously given an opportunity to maintain themselves, the general influence is in the direction of a lowering of prices and the breaking down of the distinctions between the jobbers and the retail merchants.

In cities where interurban railway lines radiate in all directions to the smaller towns and villages the complexion of the Hardware business is being changed by the advent of the freight carrying trolley road. Retail dealers in the tributary territory served by such systems are enabled to carry smaller stocks and to avail themselves of the quick transportation facilities from the jobbing and manufacturing centers offered by this new mode of transportation. A dealer who has an opportunity of selling something not in his stock calls up the manufacturer or jobber by telephone and asks that an order for the thing in question be put onto the next interurban car going his way. The result is that within a few hours after the customer has called for an article, and perhaps before he has left town, the article has been delivered from a jobbing center, say 30 miles away. This new mode of doing business is strengthening the jobbing trade in such centers and is also compelling them to carry larger stocks than they would ordinarily, as this method of distribution tends to make the small trade rely upon the jobber for the supply of certain kinds of goods. This influence is one which is developing, too, an important class of local jobbers, who in connection with a fine retail business are able to supply small houses in the outlying country districts.

Condition of Trade.

A confident tone characterizes the trade as it enters on the closing month of the year. Conditions during a good part of 1904 were such as to arouse questioning in the minds of those who give close attention to the influences affecting business as to whether a resumption of active trade on a higher range of values was to be looked for or a continued reaction from the high pressure of recent years. As the prospect of ample crops became more and more assured there was a growing confidence in the commercial future, and at the same time there was a recovery from some of the low prices developed in iron and metals, which, while it came perhaps as the result of more courageous purchasing on the part of large consumers, was in turn an important stimulant to the market, tending to produce the decidedly strong and confident tone which now prevails. In the Hardware field the influence of this improved condition of things is felt in many ways. Prices are beginning to show more strength and advances are frequent in heavy goods, and in those in which Copper is an important part. Many orders, too, are being placed, and trade is undoubtedly unusually active so far as the large buyers are concerned. It is obviously a time for merchants to study their purchasing carefully and to cover early requirements in lines which are likely to be higher in the near future. It is gratifying to note that with improving conditions in the trade in this country the movement of our products abroad continues in large volume, promising to give the present year a commanding position so far as the statistics of foreign trade are concerned. In connection with the large and liberal movement of goods abroad the very satisfactory trade with Canada is noticeable, notwithstanding the obstacles in the form of their preferential tariff. Business with the Spanish-American countries might be increased materially if commercial facilities were improved, and our manufacturers and merchants should give such markets the attention which they deserve. The constant enlargement, however, in the varieties as well as the quantities of manufactured products which are going abroad, and in the Hardware line, perhaps, as large as in any, is very gratifying. It indicates that the country is making steady progress in the way of capturing foreign markets.

Chicago

In line with predictions made in this report during the last three or four weeks, prices are advancing generally, but it is quite well understood that the advances already made are of minor importance compared with those that will be made in the near future. Galvanized Sheet Steel was advanced last week $3 a ton, or 15 cents a hundred pounds; Black Sheet Steel, 10 cents a hundred pounds, while the advance of $2 a ton in Wire products made two weeks ago is looked upon as only the signal for further advances. Pig Iron and Scrap Iron and Steel are rapidly advancing, leading to increased cost of Castings and Open Hearth Steel products. The increase in the cost of Copper and the threatened shortage of supply are reflected immediately in an advance of 7½ per cent. on Copper Rivets and Burrs and a similar advance on Brass Shoe Nails and other Brass goods. Sheet Zinc was again advanced 15 cents, making Zinc 35 cents higher than it was 10 days ago. Steel and Scrap Iron Cut Nails are being sold generally by their makers at the same price as Wire Nails, while pure Puddled Iron Nails are now held in Chicago at 15 cents instead of 10 cents premium. Local jobbers have raised the price on Cut Nails to $2 out of store, instead of $1.95, and are selling Wire Nails at $1.95 to $2, according to quantity. The heavier sizes of Machine and Carriage Bolts are strong in price and higher prices are expected to be offi-

cially announced before long. The smaller sizes of these Bolts, which are made from Wire, with rolled threads, by a comparatively new process, are still weak in price. Higher prices are looked for also on Nuts, which were selling all last summer at a price that was claimed by makers to be below actual cost. Some advances have been made, but even these have not put the Nuts on the basis of Bar Iron, which is steadily rising in price owing to the phenomenal increases in cost of Scrap and Pig Iron. Iron Bars are being sold by mills at 1.55 to 1.60 cents, and there are some makers who are holding for still higher prices. As against this, Steel Bars are being held down by the leading producer to the artificially low price of 1.30 cents, Pittsburgh, or 1.46½ cents, Chicago. Higher prices on Steel Bars are expected generally, and are hoped for by independent makers, who find the present prices very destructive to profits, owing to the steadily increasing cost of Pig Iron and Billets. As announced last week, the advance in price of $2 a ton on Wire products carries with it higher prices on Wire Fencing, the official discounts being reduced one point. Orders for Skates and Sleds, particularly Skates, are coming in in large volume in spite of the fact that there has been practically no snowfall and that warm weather has prevailed throughout the West. The recent colder weather will soon be reflected in a great increase in demand for Skates and, as soon as snow comes, Sleds and Snow Shovels, Felt Boots and other strictly cold weather goods will tax the ability of both jobbers and manufacturers to supply. Trade in Builders' Hardware, Registers, Stoves, Furnaces and their accessories has been record-breaking for the month of November, due both to the prolonged season of favorable building weather and to the increasing wealth of the agricultural population. The general situation is full of encouragement and is prophetic of higher prices and an increased demand for almost all lines of goods that are sold by the Hardware trade. It may be taken as a general proposition that a Hardware dealer will make no mistake in buying liberally up to the probable requirements for the next few months.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade during the past two weeks has been of a satisfactory nature, and we are at this writing in the midst of the season for holiday goods and season goods, both of which are in active demand. Prices have been apparently well maintained on the lines referred to, both by manufacturers and jobbers.

We think as a rule the jobbers of our city will find January 1st that the volume of their trade for 1904 has been equal to the volume of trade for 1903.

The advance in price on Wire Nails and Barbed Wire was not much of a surprise to the trade generally, and an advance is not unlooked for on some other lines. An advance in price on Pig Iron and Billets is always a warning to the average buyer, both wholesale and retail.

The two conventions recently held in Atlantic City of the National Hardware Association and the American Hardware Manufacturers' Association were doubtless the most important business conventions ever held in our country of any kind or nature, and the proceedings have been read by the general trade with considerable interest.

Doubtless the catalogue house question has interested the retail trade, as retailers all over the country have suffered from the methods by which the catalogue house business has been conducted, and while the National Hardware Association has been for some three years trying to develop methods to lessen these hardships for the retail trade, it could only be reached by preparatory methods, awaiting the time when the retail dealers themselves would join in the work with other jobbers in connection with the National Hardware Association, which is now being done.

When we look back some 10 years to when the National Hardware Association was formed, and call to mind how few persons then favored association work, and then look at the last two conventions, when over 800 persons were present, we can realize the change in feeling which has taken place. We have passed the time when a single blunderbuss, no matter how good and strong, could accomplish good results alone. It requires what was realized 10 years ago—that is, the joining together of all persons who are interested in improving trade conditions and believe in a higher standard of business methods.

Boston.

BIGELOW & DOWSE COMPANY. — Trade conditions throughout New England show a marked and steady improvement. The cold, seasonable weather is invigorating and conducive to energetic work. The ice and good skating make a large demand for Ice Skates. An occasional snowstorm, just enough to whiten the ground, is a gentle reminder to the dealers to see that their stock of Sleds, Snow Shovels and other seasonable goods are ordered if not already in store.

The recent advance in the price of Wire and Cut Nails stimulated a large demand, and is taken as a warning that higher prices are in order in many other lines. The trade is convinced that a higher level of value is assured for the very near future. There is a "snap and go" to business to-day that we can only remember in the very distant past.

The recent assembling of the manufacturers, jobbers and retailers of Hardware in convention at Atlantic City marks a new epoch in our trade relations. Those who attended these meetings could not help but come away strongly imbued with the friendly fraternal feelings that brought all so closely together. No one can gainsay the fact that such meetings are beneficial in bringing the three factors (the manufacturer, the jobber and the retailer) more closely together, for their mutual good and protection, and no one can foresee the future of the unity of these three dominant factors in the Hardware trade. Each has much work to do for the care and protection of themselves and of each other.

Acknowledging the fact that the manufacturer, the jobber and the retailer are to be the future legitimate distributers of Hardware and that each is interdependent on the other, the unity of feeling brought forth and strengthened the past week must produce future results that will be of inestimable benefit to all. Business conditions are changing. The manufacturer, acknowledging the necessity for the jobber, looks to means for his protection. The jobber is championing the cause of the retailer in his battle against catalogue house competition, as well as in urging manufacturers to establish remunerative reselling retail prices. The retailers are being more and more convinced that the jobbers are their friends and entitled to their patronage and support. All working together should do much to elevate and improve conditions for the whole Hardware trade.

Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—The market is still extremely active for this season of the year. It used to be proverbial that November and December would show the ebb tide of business, but it is not so this year. Something happened early in November which was discounted a short time previous, and which seemed to inspire confidence in business and to encourage the outlay of capital for the purchase of goods. This, with continued ease in the money market and the absence of any apprehension or alarm, has contributed to expand the general business of the country, wholesale and retail, to record breaking proportions.

The net results of the wheat and cotton crop, the high prices, not to mention Thanksgiving turkey at 25 and 30 cents per pound, have conspired to make the rural districts plethoric with money. This is moving, and preparations are being made for agricultural work on a huge scale for next year.

If there is anything to weep over except the drought in this part of the country, we do not know what it is, and the drought is so severe that even all tears are presumably dried.

The trade at large is certainly indebted to *The Iron Age* for publishing in full the addresses of the manufacturers and others at Atlantic City. The trade editors have developed journalistic enterprise to a high degree,

and the readers who can sit comfortably at home and have various questions elucidated are certainly compelled to make their acknowledgments.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Portland and Seattle last week showed up in clearings among the cities reporting the largest gains over week of a year ago, a fair indication that business in the Pacific Northwest is somewhere near normal volume. While sales may for 1904 show considerable decrease in amount, the fact will be largely accounted for by lower costs and selling prices.

Wheat is slow of sale on account of car shortage to move it east, as high ocean freight and Chicago above parity forces the grain into a new channel.

We trust the higher prices ruling in Iron, Steel and metals will soon spread to Lumber and cattle interests that the West may share with the East in the revival of business that we hope is at our door.

Cleveland.

THE W. BINGHAM COMPANY.—A brisk and quite satisfactory trade in all lines of Hardware, mining, milling and manufacturing supplies is now coming to Cleveland merchants in large volume, both through salesmen and by mail. We are especially busy selling holiday goods, and it would add largely to the profits of men in the Hardware trade if they would extend their line in what at this time of the year are called holiday goods, but are goods we sell throughout the year, and are legitimate in the Hardware line. Don't attempt to go into the Clothing, Glassware, Clock or Jewelry trade. These do not belong to the Hardware business. Let the other dealers who have worked up these lines of trade in your town have the benefit of same. Stick to the Hardware line, and keep your stocks complete and full of legitimate lines of Hardware. Look after the trade of the miners, millers and manufacturers in your town as well as that of the farmers. Don't drive the trade to other towns by not having what they want.

On account of the advances in prices of raw materials and the demand for the finished goods, the manufacturers are daily withdrawing prices, so that the prices at which the jobbers are able to offer goods at the present time are very attractive, and merchants would do well to sort up liberally on many lines of goods. They can afford to buy them for immediate wants and also to carry some of them over into next year.

The advance on prices of Nails and Wire has brought in many orders for immediate shipment, and we anticipate another advance, as the conditions of trade warrant it, but do not overbuy on staple goods. A dealer who buys more than his legitimate requirements of staple goods and is obliged to sell them at the close margin on which they are handled does not make much if any money. The interest on his money is worth to him as much as the small profit he gets on these goods. Our advice is not to speculate but look up and buy what is wanted, and keep stock well and carefully assorted on shelf goods, wherein is profit.

Now that Thanksgiving Day is past, we should feel very thankful that fortune has smiled upon us with such a good business as we have had during the year. Taking into consideration all the drawbacks with which we have had to contend, election, &c., we now feel that we are on the high road to prosperity. "Here's to prosperity. May it be given freedom in every town on our continent."

Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—November closes with trade conditions in the trans-Missouri region very similar to those embodied in our last review. The weather continues exceptionally fine and pleasant, so that outdoor operations are being pushed forward vigorously. There is a constant and steady demand for all kinds of goods, both from the agricultural and mining districts, and jobbers are well satisfied with the present conditions, as well as the future outlook. Apparently everybody has business to attend to. The large crops harvested and the satisfactory prices obtained will produce an expansion in the consuming power of the masses that cannot but have a beneficial effect on the future volume of trade. The recent advances in prices of basic materials have stimulated business considerably, and a degree of confidence in the future business activity of the country is apparent on every hand.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—At this writing we cannot think of a single feature of the Hardware business in this locality which is unsatisfactory to the jobber and retailer. The demand for goods was never better at this season of the year, in fact, every house has all the business that it can take care of.

Since the recent advance in the price of pig iron, a good many notices have been received of advances in the finished product, and as it is the general opinion of most buyers that prices will continue to advance a tremendous demand has set in, and every one seems to expect good times. The people who depend upon agriculture for a living in the South are undoubtedly in better financial condition to-day than they have been for many years; they owe less money and have more assets than they have ever had before; they are, therefore, in a condition to consume more goods than at any previous time.

Collections seem to be quite satisfactory throughout the South. The volume of the cotton, wheat and other crops, and the handsome prices received for same, has had the effect of producing a broad smile on the countenance of the honest farmer, and when he smiles the merchant laughs.

The recent advance in Wire and Nails seems to be pretty well maintained by jobbers and retailers, as every one seems to be of the opinion that these goods were rather too low.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—November has favored us with excellent weather for the farmers, and threshing and plowing are well along. Trade and collections have been somewhat hindered, but on the whole have been satisfactory. Winter opens with favorable trade conditions and prospects.

NOTES ON PRICES.

Wire Nails.—There is a continued demand of considerable proportions at the advanced price. The impression prevails that an additional upward movement in values of raw material will necessitate a further advance in finished products. Quotations are as follows, f.o.b. Pittsburgh, 60 days or 2 per cent. discount for cash in 10 days:

Carload lots	$1.70
Less than carload lots	1.75

New York.—No reduction in the volume of business has been noticed as a result of the advance in price. With the majority of jobbers November demand has exceeded that of the previous month. Jobbers appear to have little difficulty in getting fairly prompt shipments from mill. The market is firm at the following New York quotations: Single carloads, $1.89½; small lots from store, $1.95.

Chicago, by Telegraph.—Business continues to come in generously, although there is nothing sensational about the demand. Producers as a rule limit contracts at present prices to 60-day terms. The new prices announced last week are in carload lots to jobbers $1.85, base, f.o.b. Chicago, less than carload lots $1.90, base, with 5 cents advance charged to retailers.

Pittsburgh.—Demand for Wire Nails is not quite as active as before the advance was made on November 16, but a moderate volume of new tonnage is being placed by the mills, which are busily employed in making shipments on new contracts and new orders. In the Pittsburgh district a serious car shortage is looming up, and it would seem to be wise policy on the part of buyers and the smaller trade as well to anticipate requirements as much as possible. With the advent of zero weather or a heavy snow there is certain to be material delay in shipments of Wire Nails. The market is quite firm and, as noted last week, the mills are entering contracts for shipment within 60 days from date. We quote Wire Nails in carloads to either jobbers or retailers at $1.70,

and in less than carloads at $1.75, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days.

Cut Nails.—The advance of 10 cents per keg made November 17 is being rigidly adhered to by manufacturers. It is understood that any advance in the price of Wire Nails in the near future would be immediately followed by correspondingly higher prices in Cut Nails. Quotations are as follows: Carload lots, $1.70; less than carload lots to jobbers, $1.75, and to retailers, $1.85, f.o.b. Pittsburgh. Iron Cut Nails for delivery at Pittsburgh, Buffalo and all points west of these cities, 5 cents advance per keg on Steel Nails.

New York.—Demand is steady but moderate, and the tone of the market is firm at advanced prices. New York quotations are as follows: Carloads on dock, $1.84; less than carloads on dock, $1.89; small lots from store, $1.95.

Chicago, by Telegraph.—Makers of Cut Nails are quoting the same prices as are charged for Wire Nails, eliminating as a general rule the 1½ per cent. premium due to the different methods of calculating freight from Pittsburgh. In other words, instead of charging $1.86½, which would represent the $1.70, Pittsburgh, base, plus full freight, Cut Nails as a rule sell in this market at $1.85, base, or the same price as Wire Nails, in car lots, with 5 cents extra in less than car lots. No difference is made officially whether the buyer is a jobber, a retailer or a consumer.

Pittsburgh.—The Cut Nail Manufacturers' Association, which, however, does not embrace the mills in the Wheeling district, has made an advance of 10 cents a keg on Cut Nails. It may be stated that demand is quite active, the trade placing orders liberally in view of the fact that prices are practically certain to be higher. One large Western mill advanced prices of Steel Cut Nails 10 cents a keg in the past week, and now quotes $1.75, at mill. We quote Cut Nails as follows: Carloads, $1.70, base; less than carloads to jobbers, $1.75, base; less than carloads to retailers, $1.85, base, plus carload rate of freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days. Iron Cut Nails for delivery at Pittsburgh, Buffalo and all points west of these cities are 5 cents a keg higher than above prices.

Barb Wire.—Business continues in fair volume, despite the advanced season. Contracts are accepted for delivery within 60 days of same for definite quantities only. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.85	$2.15
Retailers, carload lots	1.90	2.20
Retailers, less than carload lots	2.00	2.30

Chicago, by Telegraph.—Business continues to be good in spite of the lateness of the season, and the new schedule of prices announced last week is pretty generally adhered to. These are as follows: Jobbers in car lots, Painted Wire, $2; Galvanized, $2.30; retailers, car lots, 5 cents higher; less than car lots, $2.15 Painted; $2.45 Galvanized. Staples, Bright, $1.95; Galvanized, $2.25. The leading producer will not sell beyond 60 days at these figures, and the majority of independent mills make the same limitation.

Pittsburgh.—It is getting late in the season, and this, together with the fact that buying was very heavy before the recent advance was made, has caused something of a falling off in new tonnage being placed for Barb Wire. However, the mills have heavy contracts on their books and are receiving a goodly volume of new tonnage. The market is very firm, and we quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.85	$2.15
Retailers, carload lots	1.90	2.20
Retailers, less than carload lots	2.00	2.30

Smooth Fence Wire.—Before the advance in price jobbers and consumers had pretty well covered their requirements for December, so that a falling off in demand would not create surprise. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.55
Retailers, carloads	1.60

The above prices are for base numbers 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base.	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago, by Telegraph.—Prices, which are limited to 60 days' sales or a shorter period, are $1.70, base, in car lots to jobbers, and $1.75 in car lots to retailers on Annealed Wire, and 30 cents advance for Galvanized. Less than carloads take an advance of 5 cents above these prices.

Pittsburgh.—Demand is fairly active, but not quite as heavy as before the recent advance in prices. There is some complaint in regard to shipments, owing to shortage of cars in the Pittsburgh district, and which promises to become worse in case of heavy snows or cold weather. Buyers would do well, in view of these facts, to anticipate requirements as much as possible. We quote as follows, f. o. b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.55
Retailers, carloads	1.60

Copper Rivets and Burrs.—During the period covered by the advances which have taken place there have been several advances in Copper Rivets and Burrs, and at the present writing a discount of 60 and 5 per cent. is regarded as a low price.

Wrought Washers.—This is a line in which the market has materially advanced, and the tendency is still toward higher prices.

Bolts and Nuts.—A strong tone characterizes the market in Carriage Bolts, Machine Bolts, &c., and Nuts. The low prices outstanding have been withdrawn by the manufacturers, and higher prices are announced on nearly all lines.

Glaziers' Points.—Owing to the advance in Zinc manufacturers have withdrawn quotations on Glaziers' Points or are making definite advances.

Soldering Irons.—As a result of the advance in copper manufacturers of Soldering Irons have advanced the price 1 cent a pound.

Conductor Pipe, Eave Trough, &c.—The higher prices recently adopted by the associated manufacturers are reported to be well maintained, with a good volume of business.

Pitcher Spout Pumps.—The market for Pitcher Spout Pumps is steady, and, notwithstanding the advance recently made, has a strong tone, so that the announcement of slightly higher prices for the near future would not be surprising.

Building Papers.—While the demand for a full line of Tarred Roofing Material and Building Papers has been fully up to the supply, prices in some territory have become demoralized. This is largely due to new manufacturing interests coming into the market rather than to a surplus of goods. The combination, including the leading manufacturers, has recently thrown open a large section of the territory which it had endeavored to control for nearly two years. The open territory now includes, in addition to the Western section, which has been in a more or less disturbed state for some time, practically Philadelphia and south and west of that point, which also includes South Jersey. Prices in New York and adjacent territory for Tarred Roofing Felt are: 1 ply $32.50 per ton in car lots, $35.50 less than carloads; 2 ply 55 cents and 3 ply 78 cents per roll in carloads; less than carloads, 2 ply 60 cents, and 3 ply 85 cents per roll; slaters' Felt 75 cents per roll. Rosin Sized Sheathing is a little stiffer, and is quoted at $28 per ton in carloads and $30 less than car loads. In open territory single Tarred Felt has been quoted at $27 to $30 per ton, depending somewhat on location.

Lawn Mowers.—Manufacturers of Lawn Mowers report a satisfactory business during the past season, especially so far as the volume is concerned. The outlook for 1905 is promising and many of the manufacturers have booked orders for the greater part of their output. There is something of a tendency away from the cheap goods toward machines of better grade, but there is still too much call for the low priced Mowers. Many of the jobbers find it necessary to make these an important part of their business in this line, on the ground that their customers call for them. Manufacturers who have direct dealings with the retail trade report a demand for the better machines, which are generally recognized as in the long run the only satisfactory ones to handle. In connection with Lawn Mowers the special brand evil is well developed, and some manufacturers find that practically their whole output goes out under the brands of their customers, and complain that on this account they are prevented from establishing a reputation for their goods. While the great body of orders from the large trade was taken before the recent advances in iron, the higher prices now ruling are beginning to make their effect felt on Mowers, as some of the manufacturers are withdrawing the very lowest of their outstanding quotations, and in a few cases it is intimated that higher prices have already been announced.

Sash Weights.—The Sash Weight market is feeling the effect of the stronger tone which is characterizing the Iron market, and there is evidence of an upward tendency in prices, without, however, much as yet in the way of a quotable advance. Prices in the East are in a general way represented by the quotation of $23 to $24, but in the South and West they are as usual considerably lower and somewhat even. The quotation of $18.50 to $20 will in a general way represent the market in Central and Western territory, and of $18 to $19 the prices in the South. The situation is regarded by the manufacturers generally as satisfactory and promising The stocks carried by the foundries are pretty well reduced in view of the steady demand which has within the last month or two prevailed. In some sections, however, the moderate amount of building in progress has made trade rather quiet, and there is in such sections a less hopeful view of the business. In view of the strength of the Iron market foundries are withdrawing their lowest quotations, and many of them are contemplating the advisability of advances of $1 or more per ton, and it is not unlikely that such advances will be made in the near future, if they have not, as is probable, already gone into effect in some cases.

Sheet Zinc.—Under date of the 26th ult. a further advance in the price of Sheet Zinc is announced to $7 per 100 pounds in 600-pound casks, f.o.b. mill, subject to the usual discounts.

Marty Traps.—The Burditt & Williams Company advise us that, owing to a strike at the factory of M. Marty, an advance of about 10 per cent. has taken place in the price of Marty Traps. The revised quotations will be found in the Current Hardware Prices in this issue.

The Phosphor Bronze Smelting Company.—Under date November 25 the Phosphor Bronze Smelting Company, 2200 Washington avenue, Philadelphia, announces, on account of the high prices of Copper, Tin, &c., the withdrawal of quotations on Phosphor Bronze, Delta Metal and other alloys in manufactured goods, ingots and castings.

Rope.—The market is firm, with rather light demand. Sisal and Jute Hemps have advanced in price, and the finished products are higher. Manila Rope is no higher in price and is sold at so many different prices, according to grades, that it is difficult to quote intelligently. Letters accompanying samples and prices are sometimes so ambiguous that it is difficult to tell just what the manufacturer's statement means, as a letter may read somewhat after this fashion: Our Manila Rope is pure and is made of high grade Hemp. Quotations are as follows for 7-16-inch diameter and larger: Pure Manila, 11 to 11½ cents; mixed grades, 10½ to 11 cents, according to quality; Pure Sisal, 9 to 9¼ cents; No. 2 Sisal, 7½ to 7¾ cents per pound.

Window Glass.—Demand continues good, and local jobbers have more business than they can conveniently take care of, owing to difficulty in obtaining prompt shipments from factory. New York quotations are as follows: First two brackets, single, 90 and 15 per cent. discount; larger sizes single and all double strength, 90 and 5 per cent. discount, all from jobbers' list of October 1, 1903. Manufacturers outside of the association have in some cases quoted the first three brackets, single, at 90 and 10 per cent. discount; and sizes above, single and double, at 90 and 5 per cent. discount, on lots of 75 to 100 boxes, from manufacturers' list of January 1, 1901, which is considerably lower than the jobbers' list.

Oils.—*Linseed Oil.*—The present crop of Flax Seed is estimated at 22,000,000 bushels and of much better quality than in recent years. The largest crusher is reported as carrying over a very large quantity of last year's crop, besides what has been purchased of the new crop. This practically puts them in control of the situation, being able to manipulate the market. Independent crushers are unable to forecast the market, and jobbers are uncertain whether to advise customers to buy or not. They are not, however, buying to any great extent, and most of the large consumers are either out of the market or are only buying to cover present requirements. Weather conditions are not so favorable for out of door work, and demand for small lots is consequently lighter. Quotations are as follows: State and Western Raw in carload lots, 38 cents; in five-barrel lots, 39 cents. City Raw, in lots of five barrels or more, 41 cents; in less than five barrels, 42 cents per gallon.

Spirits Turpentine.—The continued decline in the price of Turpentine is said to be caused by the accumulation of receipts at Southern points, which became too heavy for the combined operators, and they decided to market Turpentine at the decline below the 50-cent agreed holding price. Buyers have not come into the market, but are holding off awaiting further developments. According to reports, the visible supply of Turpentine amounts to 110,000 barrels, 43,000 barrels in excess of requirements, and that indications point to a surplus in excess of requirements at the end of the crop year of 60,000 barrels. Quotations in New York, according to quantity, are about as follows: Oil barrels, 50½ to 51 cents; machine made barrels, 51 to 51½ cents per gallon.

DEATH OF FRANKLIN H. BRISTOL.

FRANKLIN H. BRISTOL of Naugatuck, Conn., vice-president of the Bristol Company, Waterbury, Conn., was instantly killed in an automobile accident on the evening of November 21. He had left his home in Naugatuck to go to his factory and was passing over a grade crossing on his return when his automobile was struck by a passenger train. He was instantly killed. Mr. Bristol was 45 years of age. He was one of the founders of the Bristol Company, which began business in 1889, and since that time had taken an active part in the development of the well-known recording instruments for pressure, temperature and electricity, and also in the development of the company's patent belt lacing. His father, Benjamin H. Bristol, is treasurer of the company. His brothers are also associated with it, William H. Bristol as president, who is also professor of mathematics at the Stevens Institute of Technology at Hoboken, N. J.; Bennett B. Bristol as secretary, and Edgar H. Bristol as director. His wife and four sons survive. Mr. Bristol was a prominent member of the Congregational Church of Naugatuck and a director of the Y. M. C. A. of the town. His relations with the employees of his company were of an unusually cordial nature and his death came as a great blow to them as well as to his other friends.

HENRY DISSTON & SONS, Philadelphia, advise us that their name is being unwarrantably used by a certain individual who alleges that they have purchased and are using his formula for making Varnish. They state that they have no knowledge of the formula and that the use of their name is entirely unauthorized.

ILLINOIS RETAIL HARDWARE DEALERS' ASSOCIATION.

THE Executive Committee of the Illinois Retail Hardware Dealers' Association held a session at Peoria November 27 and decided that the annual convention shall be held in that city February 14, 15 and 16. A departure from previous customs was decided upon in order to prevent hotels making extortionate rates. Accordingly no hotel shall be known as official headquarters, and the convention will be held at the Turner Hall, which place will also afford ample space for exhibitors. A rousing programme was laid out, including a discussion of freight matters, that will be of direct financial benefit to every Illinois dealer, besides discussions on catalogue house competition and jobbers' private brands. Several papers will be read by experts not Hardware dealers, who will be paid for their services by the association.

WALLINGFORD MFG. COMPANY'S ST. LOUIS EXHIBIT.

THREE medals have been awarded at the Louisiana Purchase Exposition to the Wallingford Mfg. Company, Wallingford, Vt., on its exhibit of Grass Scythes, Hay Knives, Grass Hooks, Corn Hooks, &c., one of them, we are advised, being a special award by the jurors on

Wallingford Mfg. Company's St. Louis Exhibit.

Barden's patent Grass Hooks after a thorough test by landscape gardeners. These Grass Hooks are made from a high grade of crucible steel, finely tempered, and the company claims that they are equal to any Grass Scythe on the market.

TRADE ITEMS.

THE NATIONAL ENAMELING & STAMPING COMPANY recently leased the premises at 374-378 Broadway for a new headquarters in New York City, instead of the building now occupied by it at 78-80 Beekman street. The company has the street floor, basement and subbasement, each 75 x 150 feet in dimensions. The interior is being remodeled and the front columns are being torn away to accommodate bay windows. The floors will be used for sample and salesrooms, local office and storage of a moderate stock from which to deliver small rush orders in nearby territory. Whether or not the general offices at 81-83 Fulton street will occupy this building depends on the amount of available room later, it being the intention to move in on or before February 1 next.

THE INTERNATIONAL STEEL POST COMPANY, St. Louis, Mo., has been awarded a gold medal at the Louisiana Purchase Exposition. The company's exhibit covered Steel Posts of every description, Iron and Wire Fences, &c.

WM. H. TALBOT COMPANY, Nevada, Mo., has just been incorporated with a capital stock of $40,000 and will continue the manufacture of the Talbot Reel and other Piscatorial Specialties. Wm. H. Talbot is president and E. E. Levens, secretary and treasurer. The Talbot Reel has been on the market for a period of 12 years and has met with a constantly increasing sale. Heretofore trade has been principally with the consumer, but it is now the intention to cultivate relations with merchants.

BOMMER SPRING HINGES, manufactured by Bommer Brothers, Brooklyn, N. Y., have been awarded a gold medal at the Louisiana Purchase Exposition for excellence of quality. The company made a very artistic exhibit of their products, which was much admired by visitors. A feature of the display was a framed collection of numerous gold medals and diplomas awarded the firm at other expositions.

THE organization at Petoskey, Mich., of a new Wire and Nail industry, in which Harry Ward, formerly manager and treasurer of the Kokomo Steel & Wire Company, Kokomo, Ind., and M. Earl Brackett of the Brackett Hardware Company, Petoskey, are interested, is well on its way toward completion. The company will be capitalized at $320,000 and will manufacture Wire Nails, Barb, Plain and Galvanized Fence Wire, Telephone and Telegraph Wire and also a line of Farm Fencing. The promoters have secured an option on water power rights sufficient for the requirements of a large plant, and also state that they have a promise from both railroad and boat lines of low rates on raw material and finished products.

THE TAPLIN MFG. COMPANY, New Britain, Conn., and 155 Chambers street, New York, confident of the quality and merit of its products and recognizing the importance of having its name connected with the goods it manufactures, is taking measures to make the trade familiar with the label which is placed on all Taplin's patent Improved Dover Egg Beaters which it is putting on the market.

IN the reference in our last issue to the souvenirs distributed by the manufacturers at the Atlantic City conventions, the reminder of the Cronk & Carrier Mfg Company, Elmira, N. Y., was omitted. The souvenir distributed by this company was in the form of a nickel plated check perforator and letter opener combined.

GOODELL COMPANY'S CATALOGUE.

THE GOODELL COMPANY, Antrim, N. H., and 10 Warren street, New York, in its Catalogue C of Table Cutlery, Carvers, Butchers' and miscellaneous Knives, recently issued, has arranged the pages so that the number of article in plain figures is printed on the side margins of each page in connection with the illustration to which it applies, and at the bottom blank spaces have been provided for the convenience of the dealer in which to insert his own cost, whether in plain figures or arbitrary symbols, an example of which is herewith reproduced pertaining to Butcher Knives:

No. 746.
BEECH.
Per Doz.

5	in.————	8	in.————
5½	in.————	10	in.————
6	in.————	12	in.————
7	in.————	14	in.————

No list prices are printed in the book. Other features of the catalogue are an especially good paper that will stand erasures and a tough flexible cover.

The Minidoka Hardware Company has been incorporated at Minidoka, Idaho.

WASHINGTON HARDWARE ASSOCIATION.

THE sixth annual convention of the Washington Hardware Association was held in Tacoma on the 16th and 17th ult. It proved to be one of the most interesting and enjoyable meetings yet held. President H. D. Cowles' annual address was listened to with close attention in view of its description of the present condition of the association and its future development and opportunities. Secretary A. C. Blake, in his annual report said that the roll of the association contained 46 names, nine of which were new members. Mr. Blake urged the employment of an assistant to the secretary, who could give his entire time to the organization, canvassing non-affiliated merchants, tracing grievances, &c. There are said to be about 200 Hardware merchants in the State, so that less than 25 per cent. of them are identified with the association. Special efforts were urged to enroll as many of the Hardwaremen of the State in the association as possible. Subsequently it was decided by the association to adopt Mr. Blake's suggestion and engage an assistant to the secretary.

A number of interesting papers were read and discussed, including "Are the Hardware Dealers' Interests Properly Protected by the Present Laws of the State," by E. L. Minard of Elmira; "What Benefit Does the Retail Dealer Derive from the State Association?" by Henry Mohr of Tacoma; "How Should the Credit Part of the Retail Hardware Business Be Handled?" by N. H. Thedinga of Seattle; and "What Is the Most Effective Way to Advertise the Retail Hardware Business?" by J. A. Peebles of Seattle. The paper read by Mr. Peebles is given below.

The following offcers were elected for the ensuing year:

F. A. ERNST, Ernst Bros., Seattle, president.

H. W. MYERS, Myers Hardware Company, Tacoma, vice-president.

N. H. THEDINGA, Thedinga Hardware Company, Seattle, secretary.

H. D. COWLES, Washington Hardware Company, Tacoma, treasurer.

A. C. BLAKE, Munro, Blake & Haskell, Bellingham, member of Executive Committee.

Seattle was selected as the place of the next meeting.

One of the sessions was devoted to a joint meeting in which representatives of the Coast jobbing houses participated. This conference was productive of much good, bringing about a better understanding between the two classes, who are evidently desirous of working together in harmony.

The local association of merchants of Tacoma entertained the visiting Hardwaremen at a banquet at the Tacoma Hotel on the evening of the 17th. Mr. Mottet of Hunt & Mottet acted as toastmaster.

Advertising the Hardware Business.

Following is the paper on "What Is the Most Effective Way to Advertise the Hardware Business?" by J. A. Peebles of Seattle:

What is the most effective way to advertise the Hardware business? My idea would be by judicious advertising, in conjunction with good show windows, an attractive store and an obliging Hardwareman with obliging clerks.

NEWSPAPER ADVERTISING.

Judicious advertising in the newspapers is, I think, the best method or reaching the people. No fixed rule on advertising can be laid down. Remember that advertising is investment, not expense, and it should be as carefully dealt with as any other investment. There is also a great deal of tact to be used in advertising, as well as in selling goods, and every time you write an "ad." drive home and clinch a point that will bring you in dollars and cents.

Advertising is largely improved by the use of cuts. Contract for certain space in your local paper, be it big or little, and change your "ad." as often as you can. Be truthful in your advertising. When a customer comes to your store and finds the goods different from what he was led to believe they were in the advertisement, he may buy at that time, but nine times out of ten you have lost a customer. On the other hand, if people discover that your "ads." are not fairy tales, but a recital of facts told in a simple, honest manner, you will find you are making new customers and firm friends.

A good "ad." does not need to be a literary gem. One does not need to indulge in flowery language to write an "ad." to bring business to his store. Write as you talk, avoiding elaborate language. The simplest, strongest arguments used over the counter are just those which hold the attention of the reader. Imagine a Hardwareman saying to a customer: "We've got a complete line of Hardware, Tools, etc." Hardwaremen don't do that. More likely he would say: "Yes, sir, that knife is just what you are looking for; it's a stiletto—if it breaks from a flaw, you trot it right back and get a new one; it's fully warranted, and the price is $1.50." It is the latter sort of talk that sells goods, and the Hardwareman knows it; yet, for some reason, they do not talk that way in their advertising. I take no stock in the style of advertising that simply says: "We carry a full line of Hardware, Tinware, Stoves, etc." Why, if the reader never saw your "ad.," he could guess that every Hardware dealer in town could vouch for as much.

GOOD WINDOW DISPLAY.

Do not make your show window a dumping ground for odds and ends of all kinds, when it should be given more attention than any other part of the store. Remember, your front window is a free advertising medium and brings greater returns, for the investment, than any other method of advertising. Keep your windows clean, and change the display at least once a week. The more taste and originality put into a window show the better. Watch your clerks, and if you have one with ability for this work, encourage and aid him with suggestions. The best results are secured by exhibiting several articles of the same kind, or class, of goods. A window like this the eye will quickly catch, and the memory will retain the impression of it; while, on the other hand, if you fill your window with samples of most of the goods in the store, the mind will become confused and the effect diminished.

The nearer you come to oneness in window displays the more satisfactory will be your window advertising. An occasional display without goods will repay one for his efforts, and if not overdone will interest the people. The aim should be to have something unique and different from the displays of other merchants; also aim to be in keeping with the occasion or time of year. Any display in motion is bound to catch the eye, but no window display, no matter how attractive, should remain over two weeks to bring the best results.

KEEPING AN ATTRACTIVE STORE.

Advertising, both through the newspapers and by window displays, is to bring the people to your store. Once they are inside, the "ad." has done its work, and done it well, and your stock and your salesmen should be held responsible if you fail to satisfy the caller. Keep your stock up; it is more important for the dealer to have the article called for than to be without it merely because he had not found a suitable opportunity to buy it at a price at which he thought he should. It is a better "ad." to have the goods wanted, even if you have to pay more for them. What is wanted, when you get people inside the store, is to have the interior such that people will see the useful and necessary articles; use racks for displaying, not hiding, the goods.

INTERIOR DISPLAY OF GOODS.

The interior display of goods on the counters, shelves and in showcases is worthy of effort and care, and the aim should be to arrange goods so that they will be attractive to the eye, so that whether people wish to buy or not, they will stop and look. Some day they will want these very same goods, and will remember where they saw them.

OBLIGING CLERKS.

Every dealer should be obliging and require his salesmen to be likewise. One of the best, and, I would say, the surest, means of advertising is in the treatment of customers. No merchant should employ any one in any capacity, be he salesman or porter, who does not treat customers with respect. A kind word to every one entering the store is the best advertisement. A surly, overbearing or know it all demeanor on the part of any employee will soon cause a loss of trade. Let every customer leaving your store be a walking advertisement for it, saying a good word to a friend about your treatment of him.

Remember that all the money spent for advertising, all the money spent to make the store attractive, and all the money spent for the goods that lie on your shelves for a long period of time—all these things look forward to one end, and that is having the customer come back.

Wallace & Neil have lately embarked in business at San Antonio, Texas, handling General Hardware, Implements, Wagons, Buggies, &c.

FACTORY COST AND BUSINESS METHODS.

PIECE WORK BASIS FOR WEEKLY WAGES.

CONTINUING the description of some of the methods of Harrington & Richardson Arms Company, Worcester, Mass., we give the following particulars in regard to the manner in which stipulated wages are arranged on a piece work basis. This system, it will thus be seen, has some features different from those usually employed.

The piece work men are all paid by the day and are divided into classes according to the amount of work they produce. A certain wage is paid the man who can produce, say, 50 pieces; another wage for the 60-piece man, still another for the 70-piece man and so on. Under this system as a workman becomes more proficient in his specialty his wages are advanced. This answers as well as an inducement to constant and rapid work up to the given standard, as where the workman is actually paid by the piece. And it saves a great deal of time in making up the pay roll. Instead of the great amount of bookkeeping entailed in the usual keeping track of and reckoning piece work every man's wage is reckoned by the day.

TIME BOOK AND PAY ROLL.

The pay roll system is a very simple one. The double page of the time book answers for seven weeks' pay roll. In the first column of the first page appears the man's name and number, and after that, on that page, a series of three weeks, with a column for each day of each week, headed with the initial of the weekday, as M for Monday, T for Tuesday, and so on, and at the end of the week a column for the man's earnings for the six days. On

Arrangement of Time Book and Pay Roll.

the opposite page the man's number appears in the first column, and there is space for four more weeks. As each man's wage for the full week is known no entry is made in a day's column unless time has been missed by tardiness, leaving early, or absence. So that if a man has worked his full week all that is necessary is to put down the full week's pay, taking it from the week before, or from the last full week worked. If the works are running only half a day Saturday, then, of course, every man has the number of hours lost on that day placed in the Saturday column. It is a simple system, made possible by the system of piece work. A pay roll of 400 men is made up by one clerk in four hours.

A MANUFACTURER'S EXPERIENCE WITH THE CONTRACT SYSTEM.

A prominent New England manufacturer of Machine Tools is having an interesting and profitable experience with the contract system, which was begun as an experiment and has proved so successful that other departments of work are to be placed on the same basis, beginning with the planer work. A contract was given a man to clean all castings, he to receive so much per 100 pieces, large and small, and to hire and pay his own men. The result at the end of a few weeks of the contract is that the number of men employed on the casting cleaning job has been reduced from seven to five and the volume of work produced is 30 per cent. greater. The company is saving about 25 per cent. of the cost as compared to what it was before the contract went into effect. This illustrates the incentive that a contract gives to a man in rushing his department to its limit of production. He admits of no idling, and an inefficient workman receives short shrift from him. To decrease a working force nearly 30 per cent. and at the same time increase production 30 per cent. means a handsome profit to the contractor, and, as stated, a handsome saving of 25 per cent. to the manufacturer.

ATLANTIC ROOFING MFG. COMPANY.

THE ATLANTIC ROOFING MFG. COMPANY, Perth Amboy, N. J., is the name of a recently organized concern, incorporated under New York State laws for the manufacture of all the standard grades of Tarred Roofing Felts in 1, 2 and 3 ply, as well as Coal Tar Pitch and the materials commonly sold in connection with this line of goods. The plant comprises about 8 acres of land conveniently located on Staten Island Sound, with suitable buildings for manufacturing, and includes a covered dock about 800 feet long extending out into deep water for ocean going steamers. It is also connected by means of switches with the railroad systems of the Pennsylvania, New Jersey Central and Lehigh Valley railroads. The company has taken a long lease of the property, which was formerly occupied by the New Jersey Portland Cement Company at Perth Amboy. The company's source of supply for raw material is both adequate and sure for a long term. The plant as now laid out will produce about 25 tons per day of the three thicknesses of Tarred Roofing Felts, which can be increased as the demand warrants. The officers of the company are well-known men connected with various prominent enterprises in New York, viz.: President, Charles N. Brizse, who is also a vice-president and director of Baker, Smith & Co., steam heating; vice-president, R. R. Mabie, proprietor of the R. R. Mabie Roofing Company, 635 West Forty-seventh street; treasurer, E. H. Roberts of the Standard Steam Specialty Company, 542 West Broadway; secretary, G. I. Roberts of G. I. Roberts & Bro., 487 Fourth avenue, factory supplies, and George A. Suter of George A. Suter & Co., 112 Wooster street, steam heating. The company has an authorized capital of $50,000, all paid in in cash, and is now ready to do business. Samples will be submitted and prices quoted promptly on application. The direct management of the works is in charge of individuals who have had many years' experience in this particular line.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS *for catalogues, price-lists, quotations, &c., have been received from the following houses and are referred to the manufacturers:*

FROM SNOHOMISH PAINT COMPANY, Snohomish, Wash., which has added the sale of Builders' Hardware to Paints, Glass, Sash, &c.

FROM GREEN HARDWARE COMPANY, Castile, N. Y., which is about to embark in the Shelf and Heavy Hardware, Stove, Implement and Paint business.

FROM BIRCH & CUBBEDGE, Macon, Ga., who are successors to Etheridge & Baker in Shelf and Heavy Hardware, Stoves, Implements, Sporting Goods, &c.

FROM DORSEY BROS., Osceola, Neb., who have bought out the Hardware, Stove, Implement, Paint and Sporting Goods business formerly conducted under the style of W. H. Myers & Co. The Messrs. Dorsey were formerly of Thayer, Neb.

FROM J. SEAMAN HARDWARE COMPANY, Greenville, Ill., whose business was destroyed by fire a short time since.

THE CONDUCT OF HARDWARE BUSINESS WITH CATALOGUE HOUSE COMPETITION.

BY ARTHUR KING.

TEN years ago the retailer of merchandise pursued his pathway in peace, but in that comparatively short interval dangerous impediments have obstructed his course. Where, in the peaceful days, the retailer's service was adequate—wholly adequate in the estimation of his customers—there is now a dumb but mightily persuasive competitor reaching out for his business. And the fact that the Hardware trade has organized State and national bodies to fight the catalogue houses proves conclusively their need for it.

Dollar's Worth for a Dollar.

Let us see by what route the catalogue houses have traveled into such noticeable favor. With a capital of next to nothing, and with a kitchen table and a soap box for office equipment, one of the mail order pioneers began his business less than 20 years ago. He settled upon an article and advertised (note that) to send it by mail for a certain sum. He was safe, perfectly safe, in doing so. He needed no stock—at least, not yet. Orders were what he first wanted; then he would get the goods. When the orders came in he filled them, and he did just as he had agreed to do in his advertising (note that point). From operating with just one staple article, he took on another, and this method was compounded, but he never let up on his advertising, and he never failed to do as he had agreed. His advertising grew to enormous dimensions, and his stock kept pace, though the latter was of course of secondary importance. First, last and all the time, his advertising was the paramount issue. He never allowed it to grow stale. Not he. It was renewed, reamed, filed, burnished and polished until results were its justification. His slogan was, "The biggest dollar's worth for a dollar."

Advertising with a Big A

Genesis of the Mail Order Catalogue.

Gradually he became a power, but he never relaxed. On the contrary, he steadily extended and increased his advertising (note that—advertising—always advertising, taking care of new trade with one hand and reaching out for more with the other). Then he admitted a partner, not of flesh and blood, but rather one which could labor beyond human endurance, that never ceased working until destroyed. Day and night this partner worked constantly, sold goods galore, and yet never entailed an expense account of more than a dollar. That was the sort of partner the catalogue was. From a soap box condition this business grew to mammoth proportions, and the man who directs it employs two men at $5000 a year each to scour the farming sections, buying up farm property, mortgages and the like for investment. So much for that side of the story. Now for the other.

A Tireless Partner

Standing Pat.

There really isn't much to say of what the retailer in general and the Hardware retailer in particular have done to counteract the inroads of the catalogue houses. On the contrary, then, this must deal with what they have not done. The Hardware retailer's trade has slipped away through his allowing it to do so. He, and he alone, had established the reputation of standard goods, to the point where it was made possible for the catalogue to simply name them, have instantaneous recognition and to sell them at cut prices. Yet he never really tried to stem this sort of competition by meeting it on its own grounds.

Mischievous Indifference

Food for Reflection.

I once saw a carpenter leave a store after looking at a set of Chisels. The sight of them didn't sicken him, but the price did. When the price was given him, he had replied that he could buy from a catalogue for 24 cents less than the retailer's price. "All right," the salesman said, "I won't meet that price." There was a man convinced that the catalogue house was better able to supply his wants. Suppose that salesman had said: "I cannot meet that price," and given a business reason. Customers are amenable to reason. But no; he said: "I won't," and he had driven a customer away. I ask in all sincerity now (and I know the negative arguments), wouldn't it have been wiser to have thought it over, talked it over, reasoned it out, met the price or compromised in some amicable way? Better a small amount lost and a sale, than a disgruntled customer. A satisfied and fully pleased customer is a retailer's partner, to say nothing of being the best kind of advertisement, as much as is his bank account, for one will swell the other.

Estranging Customers

Necessity for Experienced Supervision.

Another glaring fault of the average retailer is that there is much too little co-operation between employer and employee. The average salesman is such only because he hasn't it in him to be anything else. Suppose now, in the carpenter affair referred to, that the employer had his salesman primed for just such an emergency. The office would then have been consulted, mentality would have been injected into the case, and the chances would have favored a sale. The salesman has too long been left to his own devices. That's another reason why trade has been diverted to catalogue houses or to the competitor across the street.

Store Co-operation

Obtaining a Customer's Confidence.

There is one thing that the retailer of Hardware has absolutely, stubbornly and foolishly neglected to do. The catalogue houses do it; in fact, it is the basic principle of their business. Singularly enough, it was a Hardwareman and a master, William G. Hibbard, founder of Hibbard, Spencer, Bartlett & Co., Chicago, who, as early as 1855, laid the foundation of a large mail order trade, contemporaneously with the establishment of that great business. The story, as told over his own signature in *The Iron Age* of January 2, 1896, is as follows:

The Basic Principle

> As I was the only Hardwareman in the firm, I was obliged to put my hand to about everything. I distinctly remember that soon after we opened our stock I was busily engaged filling an order for Locks, received by mail, when Mr. Tuttle (who had formerly been in another line of trade) noticed that I was laying out some of our choicest numbers, and entered a protest by saying: "Don't you know we have very few of those particular goods? Why don't you give them some on which we are overstocked?" I replied that if we wished to build up a mail order business we must ship the most desirable goods at the lowest prices on open orders intrusted to us by mail, and depend upon our salesmanship to dispose of the less popular goods when buyers were here in person. A year after, when our mail order trade was daily increasing, he said to me: "Well, Hibbard, I guess you were right, but it was not the way I was brought up." We then made and have always continued to make the mail order branch of our business its strong feature, giving our customers the best possible service and just the goods they ordered.

Sowing Business Seed.

Every retailer, wherever located, has the chance of sowing his advertising seed broadcast. Suppose it is read by a housewife in the country, and she is taught how to get something she needs by correspondence—a Meat Chopper, for instance, from the nearby city—she heeds the "Do It Now," writes a letter, and a day or two later she has the Meat Chopper screwed fast to the kitchen table and a spider full of finely chopped hash on the stove. There's the modern method! In the case of a man, whose story I shall treat of in the following paragraph, the infusion of mail order methods into his business permitted him to sell Razors, Kitchen Cutlery, Clothes Dryers and numberless other things all over his county. That's real business getting! Mail order buying is a plan that is here to stay, and the sooner the retail Hardwareman connects with that idea and plan just that much sooner will his business show a satisfactory increase. Best of all, it meets the catalogue house and goes it one better, because the local dealer can save the time involved by being nearer his customer.

Mail Order Buying Here to Stay

The Most Important Factor.

But by far the most important factor that has sent many a Hardware business down the steep decline is the utter lack of advertising, while catalogue houses use printer's ink and gain the crest of the hill success. That which made the catalogue house has been entirely neglected by the retailer. To be sure, he prints some sort of announcements, such as they are, but he never gives it much thought. Maybe he don't have time. No doubt there are those who will scoff, even now, when I say that advertising is a complexity quite beyond the average man. It is a science, amenable to scientific rule and application, and best used by one who knows his subject. Show me the average Hardware advertisement and I'll show you but a jumble of type that may name something, but which says nothing, absolutely nothing and conveys no information.

Meaningless Advertising

I saw one such advertisement a couple of months ago. It purposed to sell Vises and Clamps of a new and special kind. But the advertisement really advertised the stupidity of the firm, because the words appearing day by day in public print spelled "Vices" and "Champs." It was no typographical error, either. Yet that man wondered whether he ought not cut out advertising and save that much money. And that same man, too, bellowed like a colic stricken babe over the catalogue house and its inroads. Can't tell me that the catalogue houses haven't been a perfect blessing as compared to the methods employed by the man so careless as to let the daily papers print condemnation of his own authorship.

Wickedness for Sale

Merchants Must Get to Work.

Perhaps the organization of Hardware interests can be made to beat the catalogue men, and I could hope that they will win, but as a most helpful corollary I commend the plan of getting to work in one's own TOWN, TOWNSHIP AND COUNTY, to pull trade back by PROPER ADVERTISING, generous treatment of the give-and-take sort, meeting a price if necessary, using mail order methods, but ADVERTISING! ADVERTISING!! ADVERTISING!!! All the time and everlastingly advertising and living up to the spirit and letter of these advertisements, thus "squaring the word with the deed!" That is what made the catalogue men. Perhaps the same kind of ginger and similar ammunition used on them that they have used on others would win back much of the lost trade. "Like cures like." That's an old adage as well as a handy argument.

Spirit and Letter

THE PHILIP GROSS HARDWARE COMPANY, Milwaukee, Wis., has been awarded the contract for the finishing Hardware for the mammoth new terminal station of the Milwaukee Electric Railway & Light Company. The building is to be furnished with Chicago Patent Spindleless Locks and Knobs and an exclusive pattern in solid bronze has been designed by the architect to harmonize with the architecture of the building. The Butts throughout will be bronze and ball bearing. This is the largest single contract for Builders' Hardware that has been let in Milwaukee since the erection of the Wells office building.

FREDERICK PFEIFER, 88 Chambers street, New York, is the representative in the East of the Payson Mfg. Company, Chicago, Ill. He carries a full line of its Hardware specialties, covering the entire Eastern field between Buffalo and Pittsburgh and the Atlantic Coast, including the New England States. Among the goods referred to are wide assortments of Anti-Friction Casters, Sash Locks, Transom Lifts and Spring Hinges, together with a line of Schall patented Safety Staples, with threaded and pointed ends, held in position with square nuts on the inner side of partitions, &c.

BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, NORFOLK ST., LONDON, W. C., November 19, 1904.

The Week's Hardware Trade.

A SPIRIT of hopefulness still prevails, and there is a general expectation that the opening of 1905 will be less gloomy than were the early days of 1904. The universal difficulty is the marked reluctance of buyers to stock more than will meet immediate requirements. Thus there are plenty of orders coming in, but almost invariably for small quantities. Nor are prices at the present juncture at all remunerative. Retail rates tend to be cut, while raw materials are slightly hardening in price.

Work is slackening in Iron and Tin Plate. The brass trades are more active, but both Copper and Spelter are rising rapidly. The Cutlery trades are better than they were, but have not benefited so much as the Silver, Electroplate and Britannia metal branches. There is a moderate amount of activity in the File trade. The most hopeful colonial market just now is Australia. The most remunerative foreign market is South America.

The improvement in trade during the past few weeks is in the main reflected in the following general report upon the Hardware and Cutlery trades for the month of October:

Brass Work, Bedstead Making, &c.—Employment continued bad in the Brass trade generally and there was a good deal of short time.

Nuts, Bolts, Nails, &c.—Employment with Nut and Bolt makers was good in the Wolverhampton district, moderate at Birmingham and Smethwick, South Wales slack, and in Birmingham employment moderate with the Cut Nail makers, quiet with the machine made Rivet makers, and bad with the Wire Nail makers.

Chains, Anchors, Anvils, Vises, &c.—With makers of Cable Chains, Block Chains, side welded and dollied Chains and Anchor smiths employment was slack at Cradley. At Gateshead employment with Chain makers and strikers was good on large work and moderate on small work. With the Anvil and Vise makers in the Dudley district employment improved.

Locks, Keys and General Hardware.—In the Lock, Key and Latch trade employment continued bad; it was about the same as last month, but worse than a year ago. There was a good deal of short time in both the Wolverhampton and Willenhall districts. With the Hollow Ware trades and the galvanizers at Wolverhampton employment was good, at Birmingham it was moderate, at West Bromwich quiet.

Files, Edge Tools, &c.—In the Wolverhampton district employment with File smiths was fair.

Cutlery, &c.—In the Sheffield Cutlery trades employment generally was slack.

International Competition in Better Qualities.

Not once, but many times, has the warning been given to both American and German exporters that if they would wish to stay permanently in the British market competition must ultimately be conditioned by quality and not by price. It is, of course, obvious that prices must bear relation to quality; nor must it be supposed that because quality is excellent the market is secure, unless the price is attractive. But the point to be emphasized is that inferior quality at cut throat prices is a thing of the past. Looking back for the past ten years, during which period I have carefully watched the trend of the import trade, both from Germany and from America, I have no hesitation in affirming, first, that the inferior qualities of the middle nineties injured the import trade to a serious extent, and, second, that those firms who rigidly built up their reputation for quality have come through the struggle victorious.

The New Patent Law Regulations.

As American patentees are constantly in conflict with the British Patent Office, it may be well if they inform themselves of the new patent rules which come into force on January 1 next. Under these rules, if the invention is found to be described or claimed in some one or more British patents published during the immediately preceding 50 years, the attention of the inventor will be directed to this fact, and he will be required to cut out the old matter within two months of the date of the official letter or to acknowledge in his patent that he is aware of the prior patents. This acknowledgment must take

the form of an insertion after the claims in the specification, as follows: "Reference has been directed, in pursuance of section 1, subsection 6, of the Patents act, 1902, to the following specification of letters patent" (giving the name and number). If the description in the specification is not sufficiently clear, the inventor may be required to amend or amplify it; but if he does so, it is within the Comptroller's discretion to date the patent as of date subsequent to the original date of the application, but not later than the date when the amendment was made. The decision of the Patent law officials is subject to appeal to the Comptroller, followed, if necessary, by appeal to the law officer. If the applicant, having passed the searching ordeal, desires to have a patent sealed on his application, he must, on or before the last day on which the patent can be lawfully sealed, pay an additional Government fee of £1. It is important to note that under these new rules provisional protection will be granted for only six months, instead of nine months, as hitherto, but the cost of the provisional will not be affected in any way.

WILLIAM H. COLE.

WILLIAM H. COLE, who for 18 years has been identified with the business of the Tower & Lyon Company, New York, as partner before the incorporation and treasurer since, has severed his connection with the house and withdrawn his portion of the capital. Mr. Cole is about to engage in other business, several favorable propositions for which he now has under advisement. He takes with him the kind wishes and sincere regard of Mr. Tower and fellow officers and associates, the growth of long years of close personal contact, and, until definitely settled in the new field, will make his headquarters as heretofore with the Tower & Lyon Company, 95 Chambers street. A host of business and social acquaintances will wish him a large measure of success in the enterprises he contemplates taking up in the near future.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.

ROCHESTER STAMPING COMPANY, Rochester, N. Y.: Folder containing Thanksgiving "proclamation," in which reference is made to the material increase in the company's business during the past year and its intention to maintain the quality of the Rochester Ware.

THEO. J. ELY MFG. COMPANY, Girard, Pa.: Illustrated catalogue showing Mop Heads and Wringers, Mop and Brush Holders, Carpet, Rug and Clothes Whips, Clothes and Towel Racks, Toilet Paper Holders, Horse Pokes, Cross Cut Saw Handles, Hay Knives, Malleable D Tops, Carriage Top Dressing, Rat Traps, Anti-Rattlers, Screw Wrenches, Waffle Irons, &c.

MAINE MFG. COMPANY, Nashua, N. H.: Folders calling attention to the White Mountain Refrigerators and also to the Stone White Refrigerator, which is new this season. This refrigerator has a white enamel stone lining, the enamel being baked on the stone in such a thorough manner that the surface is really a part of the stone itself. It is polished by hand to a mirror-like surface, and the Refrigerator is offered with special claims as to its ice saving, cold retaining and food preserving qualities.

IN a paragraph in our last issue it was stated that the Avery Stamping Company, Cleveland, Ohio, had acquired a certain property at Wheeling, W. Va., and had removed the plant to Bellaire, Ohio. This, however, was an error, another Cleveland company being meant. The Avery Stamping Company has made no such purchase and does not contemplate making any, but is continuing its business on the same lines as heretofore.

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THE ATLANTIC CITY DISCUSSION ON HARDWARE DISTRIBUTION.

AT the opening session of the National Hardware Association, to which manufacturers and the public were invited, the time honored question as to the proper channel through which Hardware should be distributed was prominently discussed. Notwithstanding the fact that the subject is well worn, if not actually threadbare, having been for years a favorite topic at the jobbers' conventions, the addresses by those who were upon the programme contained some points not often made and were listened to with attention and interest. We have already given the admirable paper of George E. Corbin, president of the Corbin Cabinet Lock Company, and in the following columns present the addresses of W. P. Bogardus, president of the National Retail Hardware Dealers' Association; Samuel E. Winslow, president of S. E. Winslow Skate Mfg. Company, and George Reuter, Jr., general manager of the American Wringer Company:

ADDRESS OF SAMUEL E. WINSLOW OF SAMUEL E. WINSLOW SKATE MFG. COMPANY.

Our business happens to be one which is carried on only in one season of the year, and is such that it should be properly classed with other lines of the same character. You will, therefore, excuse me if I do not attempt to make any suggestions to persons who manufacture all kinds of commodities with an all the year round market, and you will excuse me if I confine my remarks to the one line of which I ought to have some knowledge.

A PRODUCT THAT MUST BE MARKETED IN SHORT PERIODS.

Now, in the matter of Skates it is apparent that with the innumerable small towns to cover all over this land it would be quite out of reason to think that any manufacturer should do business without the help of selling agents, and so on, with any profit to himself—to send salesmen about through the year. The sales have to be made in a very short time from the factory. The goods have to be distributed in a very short time all over the land. So it would go without any further discussion that in our business the only way for us to get goods on the market is through the help of the jobbing houses; thus we stand committed voluntarily for the first time to-day as favoring for our lines the jobbing houses. So much for that aspect of the case. But there is one other which I think in fairness I ought to mention at this time. The first is not only the means of distributing goods, but the method of handling the accounts. The other one is the influence of this particular association in helping the Skate manufacturers to follow out what appears to be a decent policy for handling their merchandise. As to the first: After the manufacturer has put his goods into the hands of the jobber, I think it is perfectly true that the manufacturer's interest does not cease.

HOW IT ALL HAPPENED.

From my experience, his trouble has just begun. I think that the jobbers—let us say previous to eight or nine years ago, and from that time back for ten years at least—were their own enemies. I think that they not only cracked each other's heads, but they put the manufacturers in the way of cracking the heads of one another. They stirred up a great amount of trouble, which began, I presume, with jobbers in their anxiety to get a great amount of business, which we all approved of. It went on to the retailer through his honest desire to get the best possible prices. It was but a step back to the manufacturers. I have never been able to find out in the altercations with our customers about prices—about favors reported to have been extended—which man was really at fault, and I have never met a man who has told me, but there has many times been evidence of lying somewhere. We have been accused of selling for $1 something that cost $1.50, and we have been accused of selling the same thing for 90 cents to the next man. This is the case with many men who go out to sell goods; if they cannot sell themselves the next proposition is to put the man who did sell in bad favor. Now, I think that is the policy of a certain class of men whom the jobber should not countenance.

WHERE THE JOBBER CAN HELP THE SITUATION.

I think it is not entirely a question of what the manufacturer does in reference to marketing goods, but that it is of equal importance that jobbers will so regulate themselves if they can that the manufacturer's efforts will be well seconded, and his purpose in working through the jobber fully supported by the jobber.

A BIT OF TRADE HISTORY.

Now, as to the attitude of this association through its working officer, the secretary. Skate manufacturers—as I think is so commonly known now as not to make it any sacrifice of confidence—have been endeavoring to so sell their goods for the past two years or more as to make it a profitable line for retailers, jobbers and manufacturers. Previous to seven or eight years ago the Ice Skate had become nothing more nor less than a football; it was kicked around and it ought really to have been thrown out of everybody's shop. There was no profit to anybody in the line. We worked along on our price proposition; we worked along with our method of selling goods; we did everything, I believe, that the manufacturers of this country could possibly have done, yet we failed to make the line profitable to jobbers and profitable to retailers. We did all we knew how to do. We then got in touch with Mr. Fernley, and as a result of several sessions finally worked out and adopted a plan. It has been in force for three years. It is not my purpose to tell what it is; it would take too long to describe. It is well known by probably a majority of the delegates in this convention. I can say that through the intercession and co-operation of this association, as represented to Mr. Fernley, the Skate manufacturers to-day, so far as prices are concerned, so far as a method of selling through jobber and retailer is concerned, have worked out a plan against which, in a canvass for over two years of over 500 customers, we have had only one complaint and that from a man who wanted his profits doubled.

ADDRESS OF GEORGE REUTER, JR., OF THE AMERICAN WRINGER COMPANY.

There are three avenues through which manufacturers distribute their products: one direct to the consumer, another to the retailer and the third to the jobber.

CREATION OF DEMAND.

I will speak first of the consumer, as that is what might be termed the introductory avenue, and is where the foundation is laid for the future demand to be supplied through the second and third avenues. Thus the great Sewing Machine industry was established by the manufacturers selling direct to the consumer, and a demand was created that is reflected now in the sale of Sewing Machines by both retailers and jobbers. The Wringing Machine industry in its infancy was of very slow growth until the first avenue was used by manufacturers, who sent canvassing agents from house to house to sell housekeepers the new labor saving article, which made such a demand for it that the first avenue of distribution was abandoned several years ago, and retailers and jobbers now find a large sale for Clothes Wringers.

THE RETAILER AS A DISTRIBUTER.

The second avenue is to the retailer, and through this the consumer is now reached in two ways: first, through sales in the merchant's store by personal contact with the consumer, and, second, through catalogues sent through the mail to reach the consumer. I believe that no manufacturer questions that the first is by far the best for him; yet I am of the opinion that it is just as legitimate to sell at retail by catalogue as it is at wholesale. In both cases ruinous cut-throat competition should be avoided by a price maintenance system, as, when a manufacturer's product becomes unprofitable to the merchant, that manufacturer's business is bound to suffer, and therefore it is to the interest of every manufacturer of a standard article to have it sold at such a price as will enable every dealer, be he large or small, to make a fair profit.

METHOD OF SELLING A CATALOGUE HOUSE.

We supply Wringers to only one or two large Chicago catalogue houses, so frequently alluded to, but they are all special or private brands, over which we have no control. If they wished to purchase our factory brands there could be no reasonable objection to our supplying them, provided they agree to sell them at prices fixed by us, and which we claim to be able to limit by reason of our owning valuable trade-marks on such factory brands.

RESTRICTED PRICES.

The two houses in Chicago are not the only ones selling to consumers by catalogue, as a number of the large department stores are selling goods in the same way, but in no case has there been a complaint against them, and for the reason that their prices have been fixed by us at a reasonable figure. There was a time when department stores would sell for $1.98 a Wringer that cost them $2. We then adopted a maintenance of price system, and the department stores in all the leading cities have for more than two years maintained the prices fixed by us on our factory brands, which prices afford them and all other

dealers a fair profit. I stated in relation to sales by catalogue that both at retail and at wholesale ruinous cut-throat prices should be avoided. We sell our factory brands to the largest wholesale catalogue house in the country, and for two and one-half years past said wholesale house has maintained the prices fixed by us.

THE JOBBER AS A DISTRIBUTER.

This brings us to the third avenue of distribution, the jobber, who reaches every town and hamlet, and who should receive a fair compensation for his services to the manufacturer, but whose profits are frequently destroyed by cut-throat methods of unprincipled competition. For a long period the prices of Clothes Wringers were cut by some jobbers who made a leader of them so that they were commonly sold at $1 per dozen profit, and in some cases at 50 cents per dozen—in other words, at not even 5 per cent. over cost. After several years of such ruinous competition the article became so unprofitable to the jobbers that we decided the only way to afford them a profit was to limit the price at which they could sell our goods. This we did on February 1, 1902. Although alone in this move we had the co-operation of a majority of the jobbers and therefore met with great success, and the listed price system proved most satisfactory for two years.

SOME DISTURBANCE CAUSED BY HIGHER CRUDE RUBBER.

It no doubt would have been equally successful this year but for the fact that the very high cost of crude rubber necessitated three advances in prices of Wringers within a period of four months. Some jobbers having old stocks could not resist the temptation of turning paper profits into cash, and other manufacturers did not limit their jobbers as to prices; therefore there has been more or less irregularity in prices this year, but I still have the greatest faith in a maintenance of price system for the sale of standard goods. It takes from the catalogue house the strongest weapon it now has, and the system benefits all business men, be they retailers, jobbers or manufacturers.

ADDRESS OF W. P. BOGARDUS OF THE NATIONAL RETAIL HARDWARE DEALERS' ASSOCIATION.

In a discussion of the question, "What are the proper avenues for the distribution of Hardware and kindred lines?" the speakers may not be able to present other than their own point of view, yet it is hoped that the discussion, while it may not settle anything, will lead to a crystallization of opinion, that it will help to establish a basis for further discussion and a final satisfactory adjustment of the question.

MUTUAL INTERESTS.

As a retailer, I take part in this collocution with no other motive than to call attention to the fact that our interests are mutual, and that our success depends on reciprocity in our relations with each other; and, further, to refer to the necessity of a recognition on the part of the manufacturer of his obligation to those who eventually put his manufactured product in the hands of the customer. It is held by a very large number that the manufacturer should distribute his product through the jobber, and he through the retailer, and he to the consumer; that this method is not because it is old, but because the experience of the centuries has proven it to be the most practical and economical method yet devised for the distribution of the manufacturer's goods. If we all held to this method and practiced it there would be no occasion for this discussion. But there are those who hold that the manufacturer has an inherent right to sell to whom he pleases and at prices he pleases, and that his interest in and control over the goods he manufactures end when they are sold.

Let us concede the inherent right of the savage to slay and eat the wild things of the forest whenever and wherever he can find them. But you and I cannot. We cannot go to Maine and shoot all the moose we may find. We cannot go to Michigan and kill deer and carry them out of the State. When we go to Ohio we are limited as to the number of quail we may shoot, and we violate the law when we offer them for sale. Shall we say that we are robbed of our inherent rights by these limitations? No, for all recognize that these laws have been made for the public good. Therefore, we must realize that all the restrictions of our inherent rights are based on and justified by the fact that civilization brings to us obligations and restrictions that the savage or uncivilized have no occasion to observe or even recognize.

SACRIFICE FOR THE PUBLIC GOOD.

And as we need surrender some of our inherent rights for the public good, we must remember that the surrender involves some modification and restriction of the savage's methods of doing business. Customs are established by experience, and we have to learn that in all we do we must recognize the rights of others. We go into the market to buy, but we cannot make the price. When we undertake to sell what we have bought we cannot make the price. The needs or necessities of our competitors make the price both in buying and selling, and there is no escape from this law, except through monopoly. When we monopolize the manufacturing of an article we make the price. When we have the exclusive sale of an article we make the price in so far as the law of supply and demand will permit. But monopoly, as a rule, is legally and morally indefensible. It is said that "competition is the life of trade," and so it is when it is healthy, but a competition that looks to the breaking down of all opposition is neither healthy nor wise. The desire to control the entire business of the country; to reach out in all directions with a greed that hesitates at nothing to accomplish its ends; to try to bribe mail carriers for lists of names in violation of law; to seek to break down all opposition, even if it result in the ruin of thousands, is an ambition so tainted with avarice and commercial dishonor that it should meet the public execration of the entire business world. When a manufacturer helps on such an ambition, an ambition that looks to the building up of an overshadowing and underselling competition, he does an injustice to the commerce of his country.

NO COUNTRY WILL REMAIN PROSPEROUS WHOSE COMMERCE IS IN THE HANDS OF A FEW,

for the few grow richer and the balance poorer each succeeding year. And the vast accumulation of wealth in the hands of a few becomes an irresistible power for the oppression of the people. The condition that experience has taught us is the ideal one is not in the concentration of manufacturers in one organization, nor the distribution of their manufactured product through a few mammoth concerns, but through a multitude of small distributers, scattered over the land, who are in close touch with the demands and requirements of the consumer.

It sounds very fine to say that there shall be no middleman, and that the manufacturer will go direct to the consumer, and so eliminate the middleman's profit. But the scheme is as visionary as it is impracticable. There can be no economical or successful distribution of goods from the manufacturer to the consumer. There are no manufacturers or group of manufacturers who make all the goods demanded by the needs of the consumer, and therefore there must be those whose business it is to assemble the goods of various kinds at economical points, and from thence distribute them to the consumer. To undertake to distribute goods from large centers is impractical because the consumer wants to see the goods and make his selection before buying.

The great trees do not depend entirely on the big roots that brace and support them for their life, but on the net work of little fibrous roots that permeate the soil and draw sustenance from it for the support of the big roots as well as the tree, for when the fibrous roots are cut off the tree dies. So the manufacturer cannot depend on the jobber for his business success unless the jobber has attached to him the thousand and one little distributers who look to him for their supplies. Now, if the manufacturer does anything that will cripple the little distributers he so far injures his own business.

THE MANUFACTURER'S OBLIGATION.

"Oh," but says the manufacturer, "we have found a new way to distribute our product. We sell to those who go direct to the consumer, and as they buy in large quantities, and are prompt pay, we can afford to give them low prices, for we have fewer customers and less accounts." Very well, if this new way takes all your product there is nothing further to say; but if it does not, and it is generally conceded that not more than 10 per cent. is distributed in that way, what about the rest? "But," says the manufacturer, "I do not care what becomes of the goods after they leave my warehouse, and I get the pay for them. I have no further responsibility in the matter. I cannot tell my customer what he shall sell his goods for. They are his and he has paid for them."

If that was the only sale the manufacturer was ever to make that kind of talk might do. But he is in the market year after year, to sell what he manufactures, and he needs people who will buy steadily of him. Is there, then, no obligation on his part to look after his trade and see that it is treated right? Is there no moral obligation on the part of the manufacturer to those who have helped him to dispose of his product? Can he ignore his responsibility without disastrous results to all concerned? Has he any right to do anything that will hamper or injure those to whom he has sold his manufactured goods and hopes to continue to sell? There is a moral obligation on every one of us that we may not ignore with safety to our business lives.

THE GOLDEN RULE IS AS APPLICABLE

in business to-day as it ever was. Does the interest of the manufacturer in his goods end with their sale? Is he satisfied to see the prices on his goods demoralized? I do not know, but I have heard that there are certain restrictions placed on the jobber by the manufacturers, and that he is forbidden, under penalty of being deprived of further supplies, to vary from the prices given him by the manufacturer. In such a case the interest of the manufacturer does not end with the sale of the goods. Now, if it does not end in such a case, is there any case where it should? Why sell to one class without restriction and to another class with such restrictions that they may not break them under any circumstances? Why put it in the power of 10 per cent. of your trade to injure and hamper the balance? "But," says the manufacturer, "we make the price according to the amount a man buys." Is that equity? Is it right? If one customer buys 20 per cent. of your output, and eight others each buy 10 per cent., why should the first one have a better price than the others? Why should an advantage be given the first customer that is denied the other eight, especially when the eight buy 80 per cent. of your goods? The unavoidable effect of such a method is to build up the one at the expense of the eight, and to demoralize and ruin your business.

THERE ARE MANY THINGS THAT SHOULD ENTER INTO THE QUESTION OF PRICE,

and quantity is but one of them. Whatever system is settled on, it must be a system that is just to all, that is fair for all, that does not tend to build up great fortunes at the expense of the consumer. Theories are good, but they must bring practical results if they are to be useful to humanity.

We cannot afford to stand for any plan that will not be fair for all with any hope of ultimate success. It is said by some that the time will come when the production and distribution of material goods will cease to be regarded as mere dollar getting, and will take their place in a department of scientific intellect, and with the scientific development of manufactures will come a more perfect mode of distribution. Yet whatever changes the future may bring, it must be that the buyer must meet the seller. And the necessity of greater knowledge of business and business methods and more complete information about and knowledge of the goods handled will be required of the coming merchant, and with this knowledge must come the enthusiasm that makes men love their work, so that the act of the distribution of goods will become a scientific and intellectual contest.

These are the days of organization, association and regulation. And while some have carried their views to extremes and have caused a reaction in favor of a larger degree of competition, yet we may not surrender the valuable things that come from organization, association and regulation, but we will add these to the balance from the other side and have as a result combination without tyranny, association without competition, and regulation without license or waste.

REFUND FOR DAMAGED GOODS OR SHORTAGE.

THE W. BINGHAM COMPANY, Cleveland, Ohio, has issued a leaflet in which it refers to the following as the correct way to obtain refund from the railroad or steamship company for damaged goods or shortage:

1. Have your station agent make notation on your paid freight expense bill of the shortage or damaged goods.
2. Write us for the original bill of lading covering the shipment, and be sure to refer us to the date of the invoice.
3. Advise us the amount and kind of items short or damaged and we will forward you promptly a certified invoice covering same.
4. Make a charge on your books against the transportation line for the shortage or damage at the cost price to you.
5. Send a bill for the amount of your charge to your station agent, attaching to it the original bill of lading, the paid freight expense bill and the certified invoice, accompanying them with a letter, if an explanation seems necessary.

Always bear in mind the fact that as soon as a shipment made by us is received in good condition by the transportation line our responsibility ceases and the goods belong to you.

If all are not received by you, or if not in good condition, the carrier is responsible to you for your loss.

While at times the transportation company may appear slow in responding to your claim, it is because it has many such to investigate; but it pays all just claims.

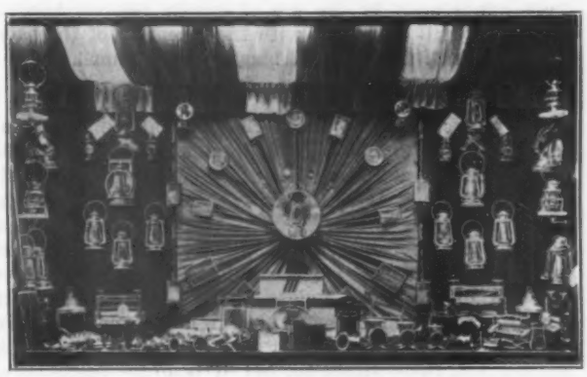
Carley Bros. have opened a Hardware store at Carley, Wash.

TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

MIXED WINDOW DISPLAY.

MERCHANTS frequently find it difficult to make a mixed window display attractive and interesting to the public. Generally speaking, this is because nothing special is incorporated in the display to catch and hold the eye, no centerpiece or anything in particular which will command attention. As an example of a good miscellaneous display we illustrate herewith a window gotten up by J. E. Hardy, who is employed by the Honeyman Hardware Company, Portland, Ore., and who is charged with the preparation of the show window exhibits. In this display an assortment of Lanterns, Meat



Mixed Window Display.

Choppers, Wringers, Corn Poppers, &c., was arranged in a manner to interest more than the average number of people. The background of the window was made up in rather an odd manner, electric lights being placed in as many of the Lanterns as possible, and especially in the large Headlight Lantern in the center and the two Tubular Lanterns at right and left of center. The end electric lights of the window had their customary white globes removed and in their place were substituted green and ruby lantern globes, which produced a spectacle very pleasing to the eye. For draperies in a window of this sort any dark color of Atlantic bunting or surgeon's cloth may be used for top, sides and back of window, with a center of same material in red. This is an effective display about the time the days begin to shorten and Lanterns are in demand.

MODERN WINDOW DISPLAYS FOR THE HARDWARE STORE.

BY J. E. HARDY, HONEYMAN HARDWARE COMPANY, PORTLAND, ORE.

THE largest users of printers' ink and the people who make the best window displays are the department stores of our larger cities, who spend thousands of dollars annually for this purpose. They must find it profitable to do this or they certainly would not continue to do it from year to year. These stores are a very fitting example for the Hardware dealer to pattern after, not that the Hardware dealer can or should go into the matter so deeply or expensively, but rather in a more modest manner try to control the trade that legitimately belongs to him.

The Greatest Shoppers

in America are women, and the department stores, knowing this, make every effort to control their trade, and to a great extent with marked success. To meet this condition the Hardware dealer must be up and doing. He must let the public know that he is in town and doing business. How can this be done? By the proper use of

printers' ink, for one way. By superior window displays for another.

Entertaining Display.

If such fine displays are made by department stores for the benefit of the ladies, why should not the Hardware dealer cater to the men's trade by giving him an entertaining display of such articles as he is accustomed to use and purchase, that he may keep in touch with all that is new and up to date? At the same time you will find that the ladies will also become interested and learn to know that the proper place to buy Hardware is at a Hardware store.

Make Good Displays.

One good window display is worth countless poor displays, and as there is but little difference in the cost, why make other than a good one? If by chance there should be considerable building going on in your city make up a Builders' Hardware window, that those who contemplate building may at their leisure moments note the many styles and makes of Locks, Butts, &c., that may be found within your store. A display of these goods makes up very handsomely by the use of orange colored Atlantic bunting for all draperies, with the exception of the background, which should be of black canton flannel.

A Window Display of Saws

is very interesting to all mechanics, particularly if an effort is made to show all the various styles and kinds. If attractively gotten up this sort of display can remain for a long time, and can easily be made full of life by simply changing the goods in the foreground from time to time. In the foreground may be placed an assortment of goods, including Logging Blocks and Tools, Axes, Wedges of different styles, Sledges, Wood Choppers' Mauls, Stocks and Dies for both iron and pipe. At first thought one would think that this style of window would attract but little attention, but it is quite the reverse. A great many will stop and examine everything very carefully, either with an idea of making a purchase at once or in the immediate future.

Atlantic bunting of a dark blue color should be used in making up the top, sides and background. Be careful that all bright goods are thoroughly polished and in good shape before displaying them.

THE ADVANTAGE OF PROMPTNESS.

PROMPTNESS often plays an important part in securing business, as it did in the following instance: A manufacturer who was not getting the amount of business on a certain line of goods which he thought he should receive reduced prices and sent out notices to the trade announcing the reduction. Late on the day that the notices were mailed a rival manufacturer learned of the reduced prices, and by working his office force late that night got off circulars to the trade, running into the thousands, announcing a larger reduction in price than the other manufacturer had made. The notices were received by the trade practically at the same time, and it is not difficult to imagine which manufacturer received the bulk of the orders.

REDUCED PRICE OPENING SALE.

E. M. Austin, Litchfield, Ill., who handles Hardware, Paints, House Furnishing Goods, &c., recently completed a large and commodious furniture store, and in commemoration of the event announced a REDUCED PRICE OPENING SALE to continue for 30 days. Two large poster circulars were issued, in which attractive prices were given on a large variety of furnishings for the home, including Stoves, Carpets, Rugs, Glassware, Bedding, &c.

MAILING LIST FOR CIRCULARS.

Mr. Austin is an aggressive advertiser, and issues circulars every few weeks. He has a mailing list containing 3000 to 4000 names, which is carefully watched to keep it up to date.

LIFE INSURANCE AND INSTALLMENT PURCHASES.

He does considerable business on a monthly payment basis, and with a view to securing the trade of the head of the family makes the following offer:

In all purchases made from us from this date until further notice, where the purchaser is a married man living with his wife or children and supporting them, and payments have been promptly and regularly made upon the purchase for a period of six months, continuously from date of purchase, upon satisfactory proof of the purchaser's death and the fact that he was supporting a wife and family at the date of his death, if he is not in default upon any payments up to said time, we will CANCEL THE BALANCE of any indebtedness on said purchase from date of said death.

ADVERTISING.

BY MARSHALL DE MOTTE.

The subject is not treated in any abstract way, but considered practically, with special reference to newspaper publicity, such as can be used by an ordinary Retail Hardware Merchant.

Fifth and Concluding Paper.

AN INSERT.

INSERT is a technical name among advertising people for the advertising matter for insertion in letters and other mail matter, or of a larger character to be placed in individual boxes of merchandise or with entire shipments.

Of course, the first move in all advertising is to get the customer, but the second must always be to keep him. Special and general advertising may do both, but these methods are too expensive for the small manufacturer who sells his ware over the entire country. Many of these manufacturers are dependent upon their salesmen and a little trade paper advertising to get their primary customers, and make no effort whatever to

SOLIDIFY THEMSELVES WITH THE CONSUMERS

of their product, with whom they never come in contact, though they are dependent upon them for their eventual success. An inexpensive and effective way is open to such manufacturers through inserts, and it should be worked to the limit to convert the remote retailer, who is now only a jobber's customer, into a personal customer, though possibly still through the jobber, because of the consumers' demands or of personal interest. This secured, the manufacturer is lifted above the chances involved in the jobber's whims, his salesman's favoritism, or a competitor's underselling, by bringing all the trade inducements to himself because of the means he has used to assist sales and to create a demand among the consumers, who hold the key to the situation.

Manufacturers' Inserts

Have you not frequently seen inserted in manufacturer's original packages of merchandise cheaply gotten up, unattractive and uninteresting pieces of printed matter, of no possible use to any one, unless possibly the jobber? Did you ever wonder why the cost of the goods was increased by even so much? So have I. The jobber never sees one of them; his stock boy may when he throws them away. Wonder if he's the man they are after? Suppose the retailer does get hold of one, it's of no value intrinsically, and anyway he doesn't care. He buys of the jobber, and his trade take what he offers, for they are not educated to do differently. Only on goods where the demand has been created by general extensive use or special advertising does he have to buy to cater to his trade's demands. To the manufacturer whose goods cannot boast introduction before this hustling advertising age and become popular favorites through long general use, and whose pocketbook is too lean to enable him to become a general advertiser,

THE INSERT IS ABOUT THE ONLY THING

left open, but if it is used well it will work surprises for him.

To-day only the few great manufacturers, who make

advertising constant study, and employ professional advertising men to plan their work, use the inserts to real advantage. Professional ad. men know the value of every eye space, and study to fill each spot with a selling argument, and that is why we see some fine inserts from the great manufacturers. Success is worth following where the strides are not too long for our legs, and this insert step is short enough to accommodate an infant industry.

A Good Insert Example

Ever hear of the U. M. C. Co.? If you wanted ammunition wouldn't you instinctively ask for U. M. C.? Now this is not an ad. of their goods, but simply an object lesson from one of many objects.

I have before me a box insert recently taken from one of their packing cases. It is about 12 x 8 inches in size, artistically gotten up, printed in colors. There is at either end a sportsman standing with his gun at attention and between them there is displayed in a very effective way the following:

Attention, Sportsmen!
U. M. C. Shot Shells
Just Received,
Fresh from the Factory.

The words are printed large enough to be seen from a distance, and the argument is just what will appeal to the sportsman every time. The presence of such a card in any store advertises both the manufacturer and the retailer.

HELPING THE RETAILER TO SELL GOODS.

There is another and more exceptional feature of this particular U. M. C. insert that must appeal still further to the retailer, coming as it does with such evidences of thought and preparation on his behalf. Just turn it over, for on the back it tells the dealer things that will also help him sell his goods, now that he has purchased them, and further pledges both retailer and wholesaler to buy the line in future seasons. The back of this insert has three sketches and a number of suggestions on how to make seasonable window trims of U. M. C. merchandise, together with other sporting goods. I want to say again that I am not advertising the Cartridge people, but simply calling attention to their use of methods that can be used in one way or another by every manufacturer who has the marketing of his own merchandise, for the manufacturer.

HAS TOUCHED BOTTOM

when he has sold and satisfied the consumer. In doing this he has "so specialized his brain" in favor of the brand the retailer bought, that he will have it the next time, and Mr. Retailer will have it for him. The words in quotation marks are from psychology. I can't tell you just what they mean, but I am sure they mean just what you want the consumer to do after you have reached him once.

Mr. Small Manufacturer.

My Dear Sir: I would like to ask you on how secure a foundation your trade rests. Just suppose some hustling, pushing, advertising kind of a fellow starts on your trail and proceeds to cut you out by creating a demand for his goods among the consumers of at first, say, only a small section of your territory. The jobber cannot hold the retailer by telling him that your goods are better. As a rule the retailer knows full as much about quality as the jobbers, and such siren songs don't allure the retailer when his customers are singing a more harmonious tune. Then, too, the jobber is interested only to the extent of his stock on hand, and your competitor will soon win him over with an extra 1 per cent.

Get a Move On

While the problem I offer you is only hypothesis (you know what that means), let us face it seriously. What are you going to do about it? He has spoiled one State with his special work, and the minute you go in there to meet his methods you find that he has only to sustain his advertising, while you have to do the big, heavy, expensive introductory work, and your Nemesis has slipped over to another territory and begun on another pet field of yours, and it will cost you all you have made to get back what the new man with new methods has won, not filched, away from you.

IT IS MIGHTY GOOD BUSINESS

to so solidify yourself and your product with the people who use it that they will not simply accept it, but will demand it, and accept no other. This can all be done at great and continued expense by advertising in magazines, &c., but such methods are not for the hundreds of humble manufacturers, like yourself, that have been built up without a line of advertising, but who stand to-day in a position to be completely eclipsed by any up-to-the-minute manufacturer with the newer methods of educating demand; so I want to ask you again, What are you going to do about it? Here, take this little insert; it will help some.

Make your inserts for the retailer.
Make them so they will help him.
Put on them what will catch his customer.
Remember his customer becomes your customer when caught.
Make every one of them attractive.
Make them of value—intrinsic value.

And, by and by, when these inserts and the good quality of your goods have made you great, you can take up the big and best way—general advertising—and double your business.

AMONG THE HARDWARE TRADE.

John E. Walsh has disposed of his Hardware, Stove and Plumbing business at West Warren, Mass., to Joseph D. Vigneux and John F. O'Leary, who will continue under the style of Vigneux & O'Leary. The new firm will make a number of radical changes in the store and add materially to the stock thus acquired.

The Dye & Bresee Hardware Company, Towanda, Pa., has been incorporated, with a capital stock of $25,000, to carry on the Hardware, Stove, Paint, Implement and Sporting Goods business formerly conducted by Chester J. Bresee, trustee.

J. E. Johnson has disposed of his stock of Hardware, Implements and Harness at Tarkio, Mo., to Grush Bros.

The stock and fixtures of Horace B. Shattuck & Son, Lowell, Mass., have been purchased by W. T. S. Bartlett, who was formerly in Mr. Shattuck's employ for a period of 15 years, when he embarked in business for himself in Lowell. This is the third Hardware store that Mr. Bartlett has bought since he started out for himself, and from a modest beginning his business has developed until now he carries an exceptionally large and varied stock, embracing Hardware, Iron and Steel, Metals, Paints, Agricultural Implements, Seeds, Contractors' and Mill Supplies, Blacksmiths' Tools, &c. The Shattuck store dates back to 1826. Mr. Bartlett has removed the stock to his own premises.

F. R. Everett is successor to Everett Bros., Osborn, Mo., in the Hardware and Implement business.

G. C. Cable has disposed of his General Hardware business, at Hubbard, Iowa, to Thompson Bros. & Baker.

Robert J. Fulton has bought the Hardware business at St. Mary's, Kan., formerly conducted by C. M. Grover.

Albert Bojens has lately opened a Hardware, Stove and Tinware store at Atlantic, Iowa.

F. L. Hunt has bought the Hardware, Stove, Implement, Paint, Lumber and Cement business formerly conducted by E. G. Berridge at Kelly, Kan.

Basche-Sage Hardware Company, Baker City, Oregon, has purchased the business of the Oregon Trading Com-

pany, Sumpter, Ore., and will continue at the old stand, running both establishments. The stock at Sumpter will be materially increased.

Thompson & Skagen, Brownsdale, Minn., lost their Implement and Buggy stock by fire a short time since. Their Hardware, Stove and Paint stock was only slightly damaged. The loss was well covered by insurance.

MISCELLANEOUS NOTES.

Enametile.

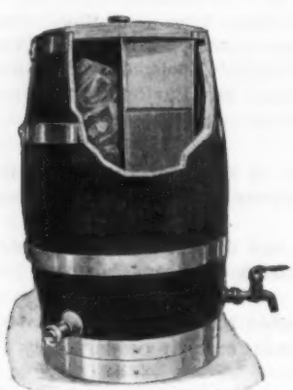
New York Metal Ceiling Company, manufacturer of plain and decorative ceilings, 537-541 West Twenty-fourth street, New York, advises us that its comparatively new product, Enametile (enameled metal tiling), is meeting with much favor at the hands of discriminating buyers. It is intended for walls, ceilings and wainscotings. It is made of a flexible, noncorrodible white metal, rolled out into thin plates, 18 x 24 inches, enameled and embossed. Enametile is made in a great variety of designs and colors, and is finished to represent the finest ceramic tiling. It is applied with a specially prepared cement directly to the finished plastered walls. Other points made by the manufacturer are the following: It is clean, vermin and germ proof; it will not crack, break or fall off; it costs from one-third to one-half less than tiling, which it imitates so closely; it is easily cleaned; the joints are butt joints, made true and level, and do not show; being flexible, it readily conforms to curved surfaces. The great difference in the weight of enametile as compared with tiling is referred to as especially commending it for use on ceilings.

Samuel Moody & Sons.

Samuel Moody & Sons, Greenfield, Mass., are manufacturing a boring tool holder for use with tools made from ¼-inch wire. The nose of the holder is drilled to take the shank of the tool, and a clamping screw entering the side of the holder is also drilled to take the tool. The action of the tightening screw is to clamp the tool against the wall of the holder, insuring rigidity. This firm is also manufacturing a combination knurling tool. The holder is slotted at its end to carry a turret containing six knurls in three pairs, fine, medium and coarse. It is easy to adjust the turret to bring the desired pair of knurls into working position.

Compartment Cooler.

The body of the cooler shown in the accompanying cut is of Flemish oak, with polished brass hoops. The well is made of malleable iron, with the top edge turned so as



Major's Compartment Cooler.

to be suspended in a groove around the inside of the staves near the top of the keg. This joint is sealed with white lead, making a dead air space between the sides and bottom of the keg and well, and prevents the metal parts being exposed to the outside air. The well is divided into two compartments by a partition extending across the center, one compartment being for water and the other for ice, thus keeping the two separate. The water compartment is lined with white porcelain, while the ice compartment is covered on the inside with black varnish. The keg is provided with a bottom in the regular way, and a supplementary bottom is screwed to the first one, extending to the bottom of the lower hoop, to make a firm base for the keg to rest on. The cover sets on the top of the keg and comes down on the top of the water and ice compartments, closing the well against outside matter. One faucet is for drawing off the drinking water and the other for the melted ice. The cooler is referred to as hygienic, economical, simple, substantial, with nothing to get out of order, as never sweating, as keeping the temperature of water at 40 degrees, as consuming a very small quantity of ice, and as very durable. In addition to water it may be used for iced tea or other light beverages. The cooler is being put on the market by A. Major, 461 Pearl street, New York.

Pail Ears and Boiler Handles.

Berger Bros. Company, Philadelphia, Pa., has recently placed on the market the trimmings shown herewith. The pail ear, Fig. 1, is stamped from wrought iron, and the sizes and thickness correspond to the malleable ears made by the company the No. 3 in malleable being No. 30 in

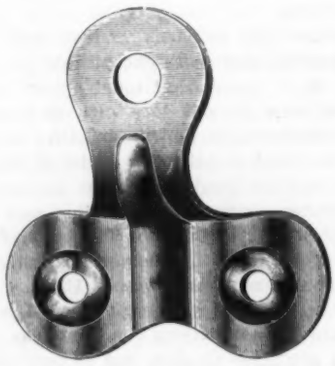


Fig. 1.—Wrought Iron Pail Ear.

wrought, &c. The sizes made at present are Nos. 30, 40, 50, 60 and 70. They are furnished in gross boxes or in bulk to suit purchasers. In Fig. 2 is shown a wash boiler handle, larger and stronger than former sizes made. The sides are stamped from heavy steel, well tinned, and

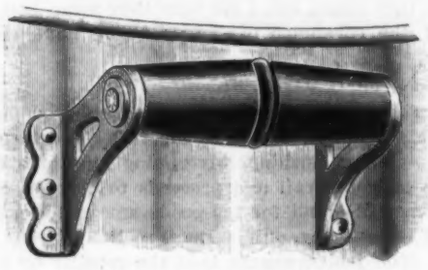


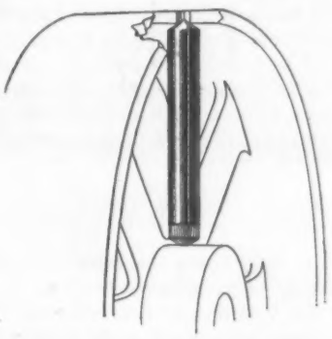
Fig. 2.—Keystone Boiler Handle No. 3.

designed to be perfectly rigid under any strain to which they are liable to be subjected. Samples of either of these articles will be mailed by the manufacturer without charge.

Graves Self Adjusting Loose Pulley Oiler.

The Butler Chuck Company, Greenfield, Mass., is putting on the market the new automatic self adjusting loose pulley oiler shown herewith. It is a very simple device, yet under test it has proved to be effective in doing away with the bother of continually oiling loose pulleys by hand, especially in overhead countershafts that cannot be reached excepting by the aid of a

ladder. The oiler contains the following few parts: A brass cylinder with conical end, which acts as the reservoir; a wooden plug with conical end and with a small hole drilled from end to end, the plug carrying leather washers, and a spring which is contained within the tube, one end bearing upon the closed end of the cylinder, the other end on the plug. Most pulleys are drilled directly though the rim into the hub, and if so the two holes will act as seats for the oiler. If there is no hole in the rim the oiler will stay in place without such assistance, if the tension of the spring is properly regulated, the function of the spring being to hold the device in position.



Graves Self Adjusting Loose Pulley Oiler.

When the pulley is revolving the centrifugal action throws the oil away from the hub, but, nevertheless, enough passes through the hole of the plug into the oil hole of the hub to provide ample lubrication of the bearing. The oil in the reservoir is sufficient for a month's service on most pulleys, and for a week or two on all pulleys, it is stated. No oil is thrown by the device.

The Iver Johnson Revolver Grip.

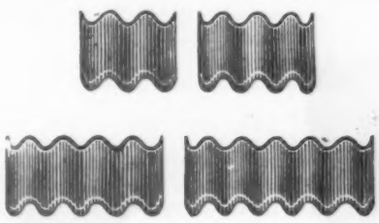
The revolver grip shown herewith is not only light but detachable, and its use is therefore optional with the user. It is held firmly in position by three small screws, and is especially fitted to each revolver so as to be as solid and firm as if the grip were a part of the frame itself. It is furnished by the Iver Johnson's Arms & Cycle Works, Fitchburg, Mass., upon the regular Iver Johnson automatic and I. J. 1900 double action revolvers at a slight additional cost. It is made and formed to fit the manufacturer's product only, and is not for sale separately or detached, or in connection with any other

The Iver Johnson Revolver Grip.

make. The manufacturer emphasizes the desirability under many circumstances of having the firm hold on the revolver secured by the use of this grip.

De Haven's Coated Corrugated Steel Fasteners.

De Haven Mfg. Company, 50-54 Columbia Heights, Brooklyn, N. Y., is introducing a new corrugated fastener, shown herewith, which has a special coating on it very similar to cement coated wire nails. This prevents the fastener working out of the wood after it is driven, even should the wood shrink a little. The coating also prevents the fastener rusting when joints are subjected to moisture. Another feature to which the maker calls attention is the curved form of the corrugations of the fastener, which draws the joint closely together. The fastener is made with the number of corrugations, 2 to 5, shown in the illustrations, and in five depths, from ¼

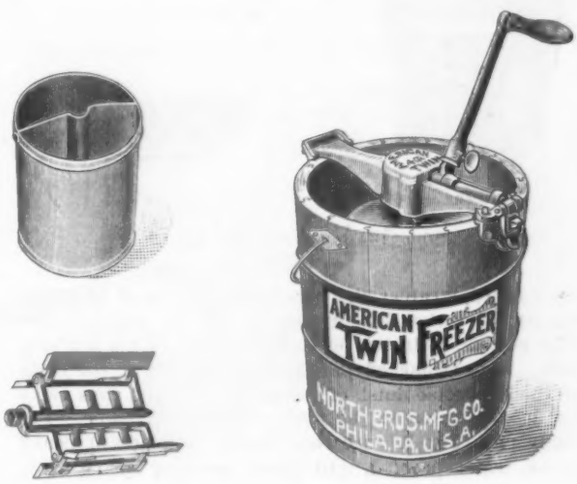


De Haven's Coated Corrugated Steel Fasteners.

to 1 inch, by ⅛ inch. The fasteners are designed for use in carriages, coffins, cabinet work, &c., and are put up in boxes of 500 each.

American Twin Freezer.

The Twin, or 2 in 1, freezer shown in the accompanying cuts freezes two flavors of cream or an ice or sherbet and ice cream at the same time in one freezer. The can is divided in two parts by a vertical partition. which projects above the top of the can and bears against



American Twin Freezer.

the can lid, so that during freezing nothing passes from one side of the can to the other. The dasher has a central shaft which fits in the groove of the partition of the can. The dasher carries two sets of scrapers, one set fitting in one side of the can and the other set in the opposite side. As the can cannot be turned as in old style freezers, because of the partition, it is swung forward and backward, and this movement is produced by a rocking motion of the crank. One scraper of the set in each half of the can scrapes when the can moves in one direction, and the others in the opposite direction. The scrapers are so arranged as to be held automatically against the side of the can, so that the frozen particles on the can are scraped off positively and continuously. The rocking movement of the crank is regulated in its length by stops on either side, thus controlling the backward and forward motion of the can so that the scrapers reach from one corner of the can partition to that on the opposite side. Besides the special feature of making two flavors at one freezing it is explained that another important advantage is the more comfortable and much easier crank movement. Although two flavors are frozen at once and with less exertion, no more time is required than in other freezers, it is said. The freezer is put on the market by North Bros. Mfg. Company, Philadelphia, Pa.

Duplex Folding Pails.

The accompanying illustrations represent two of the line of folding pails offered by the Duplex Folding Pail Company, 114 East Fourteenth street, New York. The pails are referred to as being as rigid as wood or metal when open, so that water can be thrown with them; as requiring a small space when folded; as portable, weighing but little; as simple and durable in construction and easy to manipulate, and as water tight in all temperatures. They are alluded to as being made of the best quality of close woven fabrics, thoroughly water proofed, with uprights and rims of well finished spring steel. The automobile pail, Fig. 1, holding water enough to replenish an automobile tank, is made of Pantasote cloth, with rust proof spring steel metal parts. It is provided with funnel, splash guard, strainer and wire handle. It is of 12 quarts capacity, 11 inches in diameter at the top and 9 inches at the bottom, 10 inches deep, folding into 14 x 6 x 2 inch space. It is remarked that the silky sheen of the cloth and the handsome finish of the metal arms and rims make it a fit companion to the most expensive machine. The Handy pail, Fig. 2, with rope handle, is made of heavy canvas, water proofed, with metal parts of spring steel, rust proof. It is 10 inches in diameter at the top, 8 inches at the bottom, 10 inches deep, with a capacity of 9 quarts. It folds into 13 x 5½ x 2 inch space.

Open. Folded.

Fig. 1.—Automobile Pail No. 1.

Open Folded.

Fig. 2.—Handy Pail No. 10.

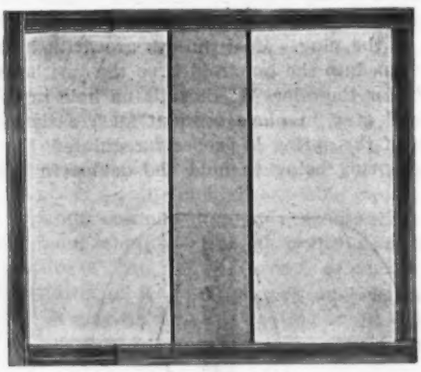
Rifle Cleaning Rod No. 605.

J. Stevens Arms & Tool Company, Chicopee Falls, Mass., is offering the rifle cleaning rod shown herewith. Instead of having a bristle tip, as in the company's No. 505 rod, this one has a brass wire tip, and is furnished in .22, .32 and .38 calibers. It can also be furnished on special orders in other calibers. The company has also added a line of Government cleaners in .22, .24, .30, .38 and .44 calibers, and on order it will furnish special calibers up to .50.

Rifle Cleaning Rod No. 605.

The Air Line Adjustable Window Screen.

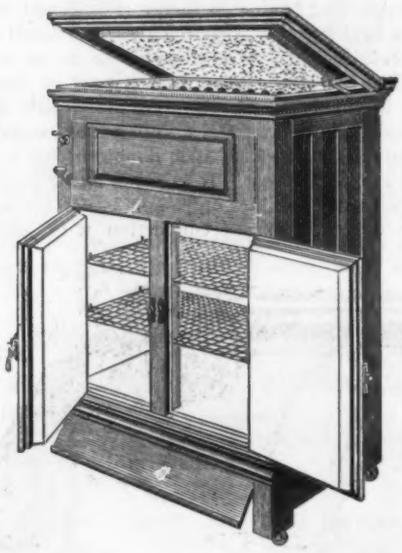
The adjustable window screen shown in the accompanying cut is put on the market by the A. J. Phillips Company, Fenton, Mich. The screen differs from the company's Flyer screen, which was brought out ten years ago, in having wooden slide pieces in place of metal ones. The slides are also partially concealed in the upper and lower edges of the frames. Thus the face of the frame is entirely free from slots, saw cuts, grooves or any device for obtaining the adjustment of the frame. The upper and lower frame bars, when the screen is adjusted in the window, present an appearance as of single bars, the same, it is explained, as in the solid custom made window screens. The sliding parts being entirely of wood, eliminate the objection to rust. The screen is referred to as being strong and handsome, and is finished in weather proof oil.



The Air Line Adjustable Window Screen.

The Stone White Refrigerator No. 908.

The accompanying cut represents one of a line of Stone White refrigerators which the Maine Mfg. Company, Nashua, N. H., is putting on the market for the coming season. These refrigerators have all of the good points of construction embodied in the company's other refrigerators, including the removable ice chamber, removable duplex ice grate, removable waste pipe and trap, and, in addition, its new type of woven wire tinned shelves. Instead of metal ridges to support the shelves they rest upon and are held securely in place by round nickel plated hooks, four to each shelf. This method of hanging the shelves is referred to as decreasing the labor in cleaning shelf supports and promoting cleanliness in the refrigerator. The cases are made of selected hard wood, well finished and mounted with substantial nickel plated hardware. The manufacturers particularly emphasize the coldness and whiteness of these refrigerators. They are made in ten numbers, with single and double doors, the latter with and without partitions in the provision chamber.



The Stone White Refrigerator No. 908.

The Stork Can Opener and Jar Sealer.

The Stork Mfg. Company, Dayton, Ohio, is offering the can opener and jar sealer shown in the accompanying illustrations. When used on a jar the movable slide is adjusted to the proper position over the top of a jar, as

Fig. 2.—Used as a Jar Sealer.

in Fig. 2, when the device is turned one way or the other to open or to seal the jar. For opening cans of any size

Fig. 3.—Used as a Can Opener.

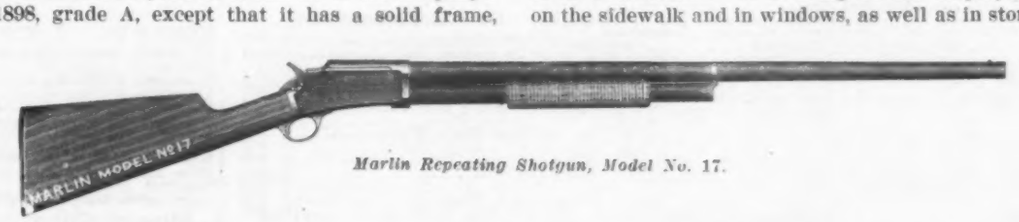
it is used as shown in Fig. 3. The convenience and durability of the device are referred to by the manufacturer.

Marlin Repeating Shotgun, Model No. 17.

The Marlin Firearms Company, New Haven, Conn., is placing on the market the shotgun shown in the accompanying cut in three styles. It is similar to the company's model 1898, grade A, except that it has a solid frame, not take down, and a straight grip stock. It is pointed out that the omission of the take down feature saves a number of pieces, making the gun extremely clean, simple and light, and permits considerable economy in manufacturing. The best material is used in every part, the workmanship and finish are referred to as of the finest quality, and the several improvements in details of operating parts as making it an easy, reliable and desirable working gun. Barrels of the gun illustrated are bored

Fig. 1.—The Stork Can Opener and Jar Sealer.

especially for smokeless powder as well as black, and chambered so that 2¾-inch or 2⅝-inch shells may be used. The stock measures 13½ inches in length, drop at comb 1⅝ inches and drop at heel 2½ inches. The full choked barrels are guaranteed to target better than 325 pellets in a 30-inch circle at 40 yards, using 1¼ ounces of No. 8 chilled shot. The gun is made in 12-gauge, grade A only, 30 or 32 inch barrel, full choked, six-shot, weight about 7⅛ pounds. A Brush gun, the same model, is a light, short, open bored gun, designed for bird shooting in cover; to be used with smokeless or black powder and any kind of shot, including buck shot. This is 12-gauge, grade A, having 26-inch barrel, cylinder bored, six shots, weight about 7 pounds. A Riot gun, same model, is an extra short and light gun, open bored, for buck shot especially, and is designed for use by watchmen, express messengers, and for protection in banks and households against burglars. This is 12-gauge, grade A, 20-inch barrel, cylinder bored, six shots, weight about 6⅞ pounds.



Marlin Repeating Shotgun, Model No. 17.

Reversible Plow Display Stand.

W. N. Martin, Hickory, N. C., is offering the plow stand shown herewith. It is adjustable to fit any make and size of plow. It can be turned around and can be raised or lowered, all with little trouble. Owing to the construction of the stand it is said to be impossible for it to overbalance. It is designed for displaying plows on the sidewalk and in windows, as well as in stores. The manufacturer calls attention to the fact that a large proportion of dealers keep plows in a basement or warehouse and wait for customers to call for them, whereas, by the use of the stand, plows can be displayed in the main store room, occupying but little floor space.

Reversible Plow Display Stand.

Shelby Ball Bearing Washing Machines.

The accompanying cuts show the ball bearing washing machines made by the Standard Mfg. Company, Shelby, Ohio. The construction of both machines is the same with the exception of the swinging bar on the Shelby. The machines do the washing by rubbing, at the same time agitating the water by throwing it back-

Fig. 1.—Shelby Ball Bearing Washing Machine.

ward and forward through the clothes, as the tub is rotated by the handle secured to the upper portion of the tub. This is referred to as an easy and natural motion, and to a certain extent automatic, as when the tub is rotated one way it comes in contact with a spring just at the right point, which starts the tub to rotate in the opposite direction; then when it comes to the point to be reversed it comes in contact with the spring again, starting it back. There is a top rubbing board which is held stationary, having ribs on the under side, which come in contact with the clothes. There are also ribs secured to the inside bottom of the tub. The ribs on the stationary rubber and rotating tub act, it is explained, upon the principle of washing on the ordinary washboard, while at the same time the rotating of the tub keeps the water in a constant state of agitation. The point is made that the ball bearings are not merely balls placed in a race of cast iron, but that the weight of the tub and clothes is carried upon ball bearings with case hardened steel above and below. The frame is made entirely of metal, the legs being tubing secured to the center hub, braced and riveted to give it strength and rigidity, essential to an easy running machine. It is pointed out that the washer is so light that a woman can handle it with ease. The tub and top rubber are removable, permitting the parts to be handled separately. The tub is made of clear white cedar, finished in natural wood, with best coach varnish to protect the wood. All iron coming in contact with the clothes is heavily coated with tin, to prevent rust, and the frame is finished in black japan. The swinging wringer board, upon which the wringer is placed, remains during the whole process of washing, doing away with the necessity of constantly changing the wringer from one tub to the other. This is accomplished by loosening a set screw at one end of the wringer board and swinging the board, with the wringer attached, around and above the other tub when it is desired to wring from that

Fig. 2.—Junior Shelby Ball Bearing Washing Machine.

point. It is explained that the machine will wash any clothes and this without doing any part on an ordinary washboard; also that lace curtains as well as the coarsest fabric can be washed without injury.

Nelson & Shoemaker on January 1 will succeed A. T. Nelson in the Hardware, Stove, Implement, Paint and Sporting Goods business in Wilton Junction, Iowa. H. P. Shoemaker was formerly in the Hardware business in Elgin, Neb., where he has been located for the past 20 years.

PAINTS, OILS AND COLORS

White Lead, Zinc, &c.—

Lead, English white, in Oil.. 9½@ 9¾
Lead, American white,, in Oil:
Lots of 500 lb or over..... .. @ 6½
Lots less than 500 lb..... .. @ 7
In Barrels..... .. @ 6
Lead, White, in oil, 25 lb tin pails, add to keg price..... .. @ ½
Lead, White, in oil, 12½ lb tin pails, add to keg price..... .. @ 1
Lead, White, in oil, 1 to 5 lb assorted tins, add to keg price .. @ 1½
Lead, American. Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.
Lead, White, Dry in bbls..... .. @ 6
Zinc, American, dry.....₱ lb 4⅝@ 4⅞
Zinc, French:
Paris, Red Seal, dry..... 8½
Paris, Green Seal, dry..... 9¾
Antwerp, Red Seal, dry..... 7¾
Antwerp, Green Seal, dry..... 8⅝
Zinc, V. M. French, in Poppy Oil:
Green Seal:
Lots of 1 ton and over.....11⅞@12⅜
Lots of less than 1 ton.....12⅛@12⅝
Zinc, V. M. French, in Poppy Oil:
Red Seal:
Lots of 1 ton and over.....10⅝@11⅛
Lots of less than 1 ton.....10⅞@11⅜
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1⅛; 25 bbls., 2⅛; 50 bbls., 4⅛.

Dry Colors—

Black, Carbon.....₱ lb 5 @10
Black, Drop, Amer..... 4 @ 6
Black, Drop, Eng..... 5 @15
Black, Ivory..... 16 @20
Lamp, Com..... 4½@ 6
Blue, Celestial.....₱ lb 4 @ 6
Blue, Chinese..... 29 @32
Blue, Prussian..... 27 @30
Blue, Ultramarine..... 4½@15
Brown, Spanish..... ½@ 1
Carmine, No. 40.....₱ lb $3.55@4.00
Green, Chrome, ordinary..... 3½@ 6
Green, Chrome, pure.....17 @25
Lead, Red, bbls., ½ bbls. and kegs:
Lots 500 lb or over..... .. @ 6½
Lots less than 500 lb..... .. @ 7
Litharge, bbls., ½ bbls. and kegs:
Lots 500 lb or over..... .. @ 6½
Lots less than 500 lb..... .. @ 7
Ocher, American.....₱ ton $8.50@16.00
Orcher, American Golden..... 2½@ 3½
Orcher, French..... 1¾@ 2¾
Orcher, Foreign Golden..... 3 @ 4
Orange Mineral, English..₱ lb 8⅝@10½
Orange Mineral, French.....10½@11¼
Orange Mineral, German..... 7 @10
Orange Mineral, American..... 8 @ 8¼
Red, Indian, English..... 4½@ 8½
Red, Indian, American..... 3 @ 3¼
Red, Turkey, English..... 4 @10
Red, Tuscan, English..... 7 @10
Red, Venetian, Amer..₱ 100 lb $0.50@1.25
Red Venetian, English..100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered .....₱ lb 3 @ 9½
Sienna, Ital., Raw, Powd.... 3 @ 6½
Sienna, American, Raw..... 1½@ 2
Sienna, American, Burnt and Powdered .....₱ lb 1½@ 2
Talc, French.....₱ ton $20.00@30.00
Talc, American.....₱ ton $13.75@25.00
Terra Alba, French..₱ 100 lb 90 @1.00
Terra Alba, English..... 90 @1.00
Terra Alba, American No. 1..60 @70
Terra Alba, American No. 2..45 @50
Umber, T'key, Bnt. & Pow.₱ lb 2½@ 3½
Umber, Turkey, Raw & Pow.. 2½@ 3½
Umber, Burnt, Amer..... 1½@ 2
Umber, Raw, Amer..... 1½@ 2
Yellow, Chrome..... 11 @14
Vermilion, American Lead....10 @25
Vermilion, Quicksilver, bulk.. .. @65
Vermilion, Quicksilver, bags.. .. @66
Vermilion, English, Import....75 @80
Vermilion, Chinese.....$0.90@1.00

Colors in Oil—

Black, Lampblack..... 12 @14
Blue, Chinese..... 36 @46
Blue, Prussian..... 32 @36
Blue, Ultramarine..... 13 @16
Brown, Vandyke..... 11 @14
Green, Chrome..... 10 @15
Green, Paris..... .. @24
Sienna, Raw..... 12 @15
Sienna, Burnt..... 12 @15
Umber, Raw..... 11 @14
Umber, Burnt..... 11 @14

Miscellaneous—

Barytes, White, Foreign.....
₱ ton $17.50@20.00
Barytes Amer. floated..... 16.00@17.00
Barytes, Crude, No. 1..... 10.00@11.00
Chalk, in bulk.....₱ ton 3.00@ 3.25
Chalk, in bbls.....₱ 100 lb .25@ .35
China Clay, English..₱ ton 12.00@17.00
Cobalt, Oxide.....₱ 100 lb 2.50@ ....
Whiting, Common...₱ 100 lb .45@ .48
Whiting, Gilders..... .55@ .57
Whiting, Extra Gilders'..... .58@ .60

Putty—

In bladders..... 1¾@2
In bulk..... 1.05@1.15
In cans, 1 lb to 5 lb..... 2¾@4
In cans, 12½ to 25 lb..... 1¾@2

Spirits Turpentine—

In Oil bbls..... 52 @52½
In machine bbls.....52½@53

Glue—

Cabinet .....₱ lb 11 @15
Common Bone..... 6 @ 8
Extra White..... 18 @24
Foot Stock, White..... 11 @14
Foot Stock, Brown..... 7 @10
German Hides..... 12 @18
French ..... 10 @40
Irish ..... 13 @16
Low Grade..... 8 @11
Medium White..... 14 @17

Gum Shellac— Cts. ₱ lb.

Bleached Commercial.....43 @44
Bone Dried.....53 @54
Button .....45 @60
Diamond I.....59 @..
Fine Orange.....52 @54
A. C. Garnet.....45 @46
D. C.....1.00 @..
Octagon B.....54 @55
T. N.....49 @52
V. S. O.....60 @..

Animal, Fish and Vegetable Oils—

Linseed, City, raw.....₱ gal. 41 @42
Linseed, City, boiled..... 43 @44
Linseed, State and West'n, raw.38 @39
Linseed, raw Calcutta seed..... @55
Lard, Prime, Winter..... 57 @59
Lard, Extra No. 1..... 48 @49
Lard, No. 2..... 36 @38
Cotton-seed, Crude, f.o.b. mills.19 @20
Cotton-seed, Summer Yellow prime ..... 26½@28
Cotton-seed, Summer Yellow off grades..... 26 @26¾
Sperm, Crude..... 60 @..
Sperm, Natural Spring..... 53 @55
Sperm, Bleached Spring..... 57 @58
Sperm, Natural Winter..... 55 @56
Sperm, Bleached Winter..... 58 @59
Tallow, Prime..... 48 @50
Whale, Crude..... @..
Whale, Natural Winter..... 43 @44
Whale, Bleached Winter..... 45 @46
Menhaden, Brown, Strained....27 @28
Menhaden, Light, Strained....28 @29
Menhaden, Bleached Winter..30 @32
Menhaden, Ex-Bld. Winter...32 @33
Menhaden, Southern.....19½@20
Cocoanut, Ceylon..... @ 7
Cocoanut, Cochin..... 7½@ 7¾
Cod, Domestic..... 34 @36
Cod, Newfoundland..... 39 @41
Red Elaine..... 28 @30
Red Saponified.....₱ lb 4½@ 5
Olive, Italian, bbls..... 52 @55
Neatsfoot, prime..... 50 @51
Palm, prime Logos.....₱ lb 5⅜@ 6

Mineral Oils—

Black, 20 gravity, 25@30 cold test .....₱ gal. 11 @12
Black, 29 gravity, 15 cold test..12 @13
Black, Summer..... 11 @12
Cylinder, light filtered.....18½@19½
Cylinder, dark filtered.....16½@17½
Paraffine, 903-907 gravity.....13 @13½
Paraffine, 903 gravity..... 12 @12½
Paraffine, 883 gravity..... 9¾@10
Paraffine, red..... 12 @13½
In small lots ½¢ advance.

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Domestic, ℔ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....℔ lb 7¼@7¾¢
Hay-Budden, Wrought.....8@9¼¢
Horseshoe brand, Wrought.....8@9¼¢
Trenton .....℔ lb 8@9¼¢

Imported—

Peter Wright & Sons.....℔ lb 10½¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Hull Bros. Co.....30&10%
Livingston Nail Co.....33⅓%

Augers and Bits—

Com. Double Spur....75@75&10%
Boring Mach. Augers..70&10@75%
Car Bits, 12-in. twist..60@60&10%
Jennings' Pattern..60&10@10@70%
Ford's Auger and Car Bits.....40&5
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&10&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits (R. Jennings' list) 50%

Bit Stock Drills—

See *Drills, Twist.*

Expansive Bits—

Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ℔ doz. $26; No. 2, $18.....50&10%
Ford's, Clark's Pattern.....50&10&60%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—

Common Dble. Cut..gro.$3.00@3.25
German Pattern....gro.$4.50@4.75

Hollow Augers—

Bonney Pat., per doz..$10.00@11.00
Ames .....25&10%
New Patent.....25&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—

Ford's 40%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's 40%

Awl Hafts—See *Hafts, Awl.*

Awls—

Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00
Hurwood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

Single Bit, base weights. (up to 3½ lb.)
First Quality.....$6.50
Second Quality.....$5.75
NOTE.—Heavier Weights add Extras as per regular schedule.

Axle Grease—See *Grease, Axle*

Axles—*Iron or Steel*

Concord, Loose Collar....4@4½¢
Concord, Solid Collar....4½@5¢
No. 1 Common.....3½@3¾¢
No. 1½ Com., New Style3¾@4¼¢
No. 2 Solid Collar.....4¼@5¢
Nos. 7, 8, 11 and 12....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18...60&10@65&10&10%
Nos. 19 to 22.....70&10@75%

Boxes, Axle—

Common and Concord, not turned lb. 4¼@4½¢
Common and Concord, turned. lb. 5@5¼¢
Half Patent.....lb. 9@9½¢

Bait—Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances—Sash—

Caldwell new list.....50%
Pullman .....50&10@60%

Spring—

Spring Balances.....60@60&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb.... per lb. 2¼@2¾¢

Towel

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—

Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....℔ gro. $7.80
No. 2 Buffalo.....℔ gro. $9.00
No. 3 Perfection Dust.....℔ gro. $8.00

Egg—

Holt-Lyon Co.:
Holt, No. A, Japanned....℔ doz. $1.20
Holt, No. 1, Tinned.....℔ doz. $1.50
Holt, No. B, Japanned....℔ doz. $2.00
Holt, No. 2, Tinned.....℔ doz. $2.25
Lyon, No. 2, Japanned....℔ doz. $1.25
Lyon, No. 3, Japanned....℔ doz. $1.50
Taplin Mfg. Co.: ℔ gro.
No. 60 Improved Dover.....$5.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd..$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd.$17.00
No 200 Imp'd Dover Tumbler....$8.50
No. 202 Imp'd Dover Tumbler, T'd..$9.50
No. 300 Imp'd Dover Mammoth, doz. $25.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (S. S. & Co.).℔ gro. net, $6.00

Bellows—

Blacksmith, Standard List.. 60&10@70&10%

Blacksmiths'—

Inch..	30	32	34	36	38	40
Each.	$3.25	3.50	4.00	4.50	5.00	5.75

Extra Length:

Each.	$3.75	4.25	4.75	5.25	6.00	7.00

Hand—

Inch...	6	7	8	9	10
Doz...	$4.50	5.00	5.50	6.00	6.50

Molders—

Inch.	9	10	11	12	14
Doz.	$8.00	9.00	10.50	12.50	14.50

Net Prices.

Bells—Cow—

Ordinary goods.....75&5@75&10%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&5%
Trip Gong.....50&10@50&10%
Yankee Gong.....5%

Hand—

Hand Bells, Polished, Brass.. 60&5@60&10&5%
White Metal.....60%
Nickel Plated....50&10@50&10&5%
Swiss .....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—

Farm Bells.....lb. 2¼¢
Steel Alloy Church and School 50&10&5@60&5%
American Tube & Stamping Co. Gongs 75%
Table Call Bells.....50@50&10%

Belting—Leather—

Extra Hvy, Short Lap..60@60&5%
Regular Short Lap..... 60&10@60&10&10%
Standard .....70@70&5%
Light Standard.....70&10%
Cut Leather Lacing.....60&10%
Leather Lacing Sides, per sq. ft. 18¢

Rubber—

Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....65&70%
Extra .....60&50@60&10%
High Grade.....50&5@50&10%

Bench Stops—

See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.

Bicycle Goods—

John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—

Common Wooden....70&10@75&5%
Hartz St. Tackle Blocks.....50@50&5
Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, &c...30&10@40&10%

Boards, Wash—

See *Washboards.*

Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

Bolts—

Carriage, Machine, &c.—

Common Carriage:
⅝ x 6 and Smaller...75&10@80%
Larger sizes.....75@75&10%
Phila. Eagle, $3.00 list May 21, '93 80&10%
Bolt Ends, list Feb. 14, '95..75@..%
Machine .....75&5@75&10&5%
Machine with C. & T. Nuts.. 70&5@..%

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch.....	3	4	5	6	8
Per doz.	$0.26	.30	.39	.47	.65

Cast Iron Spring Foot:

Inch.....	6	8	10
Per doz.....	$1.00	1.25	1.75

Cast Iron Chain, Flat, Japanned:

Inch.....	6	8	10
Per doz.....	$0.75	1.05	1.30

Cast Iron Shutter, Brass Knobs:

Inch.....	6	8	10
Per doz.....	$0.57	.80	1.00

Wrt Barrel, Japd..75&10@75&10&10%
Wrt " Bronzed50&10@50&10&10%
Wrought Spring..70&10@70&10&10%
Wrt. Shutter..50&10@50&10&10&5%
Wrt. Square Neck..70&10@70&10&10 Wrt Square.66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Stove and Plow—

Plow .....67&10@..%
Stove .....80&5@80&10&5%

Tire—

Common 72½%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....72½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....72½%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....72½%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	1¼	1½	1¾	2
Per doz...	$4.30	5.00	5.75	7.25
Inch	2¼	2½		
Per doz.....	$8.65	11.50		

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection .....℔ doz. $30.00
Schatz 40%

Braces—

Common Ball, American..$1.15@1.25
Barber's .....50&10&10@60&10
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....50%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60&10@65%

Brackets—

Wrought Steel.....80&10@..%
Bradley's Wire Shelf:
Full cases.....80&10&10%
Broken cases.....80&10%
Griffin's Pressed Steel.....80%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—

See *Wire and Wire Goods.*

Broilers—

Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—

Price per dozen.

Quart.....	*10*	*12*	*14*
Water, Regular...	*1.50*	*1.70*	*1.90*
Water, Heavy....	*3.50*	*3.70*	*3.80*
Fire, Rd. Bottom..	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—

Hoosier.....℔ gro. $36.00

Bull Rings—See *Rings, Bull*

Butts—Brass—

Wrought, list Sept... '96..20@30%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad....50@50&10%
Fast Joint, Narrow...50@50&10%
Loose Joint.....70&5@70&10%
Loose Pin.....70&5@70&10%
Mayer's Hinges.....70&5@70&10%
Parliament Butts...70&5@70&10%

Wrought Steel—

Table and Back Flaps...75%
Narrow and Broad.....75%
Inside Blind.....75&10%
Loose Pin.....75%
Loose Pin, Ball and Steeple Tip .....50&20%
Japanned Ball Tip Butts... 70&10%
Bronzed, Wrt., Nar. and Side Blind Butts....55&10%

Extra 10&10&10%

Cages, Bird—

Hendryx Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—
Blunt, 1 prong.....per lb. 4¼¢
Sharp, 1 prong...per lb., 4½@4¾¢
Gautier, Blunt.....4@4¼¢
Gautier, Sharp.....4½@4¾¢
Perkins', Blunt Toe.....₱ lb 3.65¢
Perkins', Sharp Toe.....₱ lb 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern.....	$1.35	1.85	2.05 each.
New York Pattern..	1.50	2.20	2.45 each.
Baltimore Pattern..	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—
Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.60 gro., net.

Caps, Percussion—
Eley's E., B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket .....per M 62@63¢

Primers—
Berdan Primers, $2 per M..20&5%
B. L. Caps (Sturtevant Shells) $2 per M.....20%
All other primers per M.$1.52@1.60

Cartridges—
Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd..$1.90
B. B. Caps, Round Ball....$1.10
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—
Bed .....70@70&10%
Plate .....60&10@60&10&5%
Philadelphia .....75@75&10%
Acme, Ball Bearing.....33⅓
Boss .....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—
American Coil, Straight Link:

3-16	¼	5-16	⅜	7-16	½	9-16
7.40	5.10	4.15	3.45	3.30	3.20	3.15
⅝	¾	⅞	1 to 1¼ inch,			
3.10	3.00	2.95	2.95 per 100 lb.			

German Coil.....60&10&10@70%

Halters and Ties—
Halter Chains..60&10@60&10&10%
German Pattern Halter Chains, list July 2½, '97.....60&10&10%
Cow Ties.....60@60&10%

Trace, Wagon, &c.—
Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring..$23.50
6½—6-2, Str'ght, with ring..$24.50
6½—8-2, Str'ght, with ring..$28.00
6½—10-2, Str'ght, with ring.$32.00
NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Trace, Wagon and Fancy Chains .....60&5@60&10&5%

Miscellaneous—
Jack Chain, list July 10, '93:
Iron .....60&10@60&10&5%
Brass .....60&10@60&10&10%
Safety Chain.....75@75&10&5%
Gal. Pump Chain....lb. 4¼@4¾¢
Covert Mfg. Co.:
Breast .....40&2%
Halter .....40&2%
Heel .....40&2%
Rein .....40&2%
Stallion .....40&2%
Covert Sad. Works:
Breast 70%
Halter 70%
Hold Back.....70%
Rein 70%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Eureka Coil and Halter....45@50&5%
Niagara Coil and Halter....45@50&5%
Niagara Cow Ties.....45&5@50&10&5%
Niagara Wire Dog Chains..45@50&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl. Jointed Chain.....50%

Chalk—(From Jobbers.)
Carpenters' Blue.....gro. 35@38¢
Carpenters' Red.....gro. 30@33¢
Carpenters' White....gro. 25@28¢
See also Crayons.

Checks, Door—
Bardsley's 45%
Columbia .....50&10%
Eclipse .....60&10%

Chests, Tool—
American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—
Socket Framing and Firmer
Standard List.....70&10@75&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60%
C. E. Jennings & Co. Socket Framing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's 70%
L. & I. J. White.....30@30&5%

Tanged—
Tanged Firmers....40&5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White, Tanged.....25&5%

Cold—
lb.
Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—
Beach Pat., each $8.00.....35&5%
Pratt's Positive Drive.....25%
Empire 25%
Blacksmiths' 25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal 50%
Combination 50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....40%
Drill Chucks, Skinner Pat., 0, 1, 2..40%
Drill Chucks, Skinner Pat., 3, 4, 5, 6, 7, 8.....30%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....25%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination 50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent 50%
Independent Steel.....40%
Union Drill.....45%
Universal 50%
Independent Iron F. Plate Jaws..40%
Independent Steel F. Plate Jaws.40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—
Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P. S. & W. Co..50%
Carriage Makers', Sargent's.....60%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—
Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—
Star Socket, All Steel..₱ doz. $4.05 net
Star Shank, All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓@33⅓&10%
L. & I. J. White.....30%

Clippers—
Chicago Flexible Shaft Company:
'98 Chicago Horse.....$8.75 } 15%
1902 Chicago Horse.....10.75 }
20th Century Horse, each, $5.00..20%
Lightning Belt.....$15.00 }
Chicago Belt.....$20.00 } 15%
Stewart's Patent Sheep, $12.75....20%

Finger Nail Clippers—
Smith & Hemenway Co.₱ doz. net $2.00

Clips, Axle—
Eagle, 5-16 and ⅜ in..75@75&10%
Norway, 5-16 and ⅜ in..60&10@70%

Cloth and Netting, Wire
—See *Wire, &c.*

Cocks, Brass—
Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.....70&10@75%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—
Metal Stamping Co.....40%

Mane and Tail—
Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.
Ordinary Goods.....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers 65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses 50%

Conductor Pipe, Galva.—
L. C. L. to Dealers:

Territory.	*Nested.*	*Not nested.*
A. Eastern.	75&12½%	75&7½%
B. Eastern.	75&10&7½%	75&12½%
Central ...	75&12½%	75&5%
Southern .	70&10&5%	70&10%
S Western..	70&12½%	70&7½%

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each..	2	3	4	6	8
Labrador ...	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.....	3	4	6	8	
Iceland, ea..	$1.80	$2.10	$2.40	$3.00	
Gal.....	2	3	4	6	8
Galv. Lined, ea.	$1.85	$2.00	$2.25	$2.90	$3.90

25%

Gavl. Lined, side handles,

Gal.	2	3	4	6	8
Each.	$1.95	$2.15	$2.40	$3.30	$4.15..25%

Coopers' Tools—
See *Tools, Coopers'.*

Cord— Sash—
Braided, Drab.....lb. 35¢
Braided, White, Com..lb. 21@22¢
Cable Laid Italian..... lb., A, 18¢; B, 16¢
*Common India.....*lb. 10@10½¢
Cotton Sash Cord, Tw'ted.11@16¢
Patent Russia.....lb. ..@14¢
Cable Laid Russia....lb. ..@15¢
India Hemp, Braided..lb. ..@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted..lb. 12@13¢
Anniston Cordage Co.: Braided Cotton, Old Glory, Nos. 7 to 12....₱ lb 28 ¢
Anniston, Nos. 7 to 12....₱ lb 22 ¢
Old Colony, Nos. 7 to 12..₱ lb 22 ¢
Anniston Drab, Nos. 7 to 12..₱ lb 26 ¢
Pearl Braided, cotton, No. 6, ₱ lb, 22¢; Nos. 7 to 12, 21¢.
Eddystone Braided, Nos. 7, 8, 9 and 10.....₱ lb 24 ¢
Eddystone Braided Cotton, No. 6..₱ lb 25 ¢
Harmony Cable Laid Italian, Nos. 7 to 10.....₱ lb 23 ¢
Peerless:
Cable Laid Italian.....16 ¢
Cable Laid Russian.....14 ¢
Cable Laid India.....12 ¢
Braided India.....18 ¢
Samson, Nos. 7 to 12:
Braided, Drab Cotton.....₱ lb 36½ ¢
Braided, Italian Hemp....₱ lb 36 ¢
Braided, Linen.....₱ lb 53 ¢
Braided, White Cotton or Spot....₱ lb 33 ¢
Massachusetts, White.....₱ lb 28 ¢
Massachusetts, Drab.....₱ lb 32 ¢
Phoenix, White, Nos. 7 to 12....24 ¢
No. 6 cords, 1¢ extra.
Silver Lake:
A quality, Drab.....40 ¢
A quality, White.....35 ¢
B quality, Drab.....35 ¢
B quality, White.....30 ¢
Italian Hemp.....40 ¢
Linen .....57½ ¢

Wire, Picture—
List Oct., '00.....
85&10&10@85&10&10&5%
Hendryx Standard Wire Picture Cord 85&10&5%

Cradles—
Grain .....40&12½%

Crayons—
White Round Crayons, gr. 5½@6¢
Cases, 100 gro., $4.00, at factory.
D. M. Steward Mfg. Co.:
Jumbo Crayons.....gr. $3.50
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square.....gr. $1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots, 20%
Zelnicker's Lumber:
Red, Blue, Green.....₱ gro. $6.50
Black .....₱ gro. $4.00
See also Chalk.

Crooks, Shepherds'—
Fort Madison, Heavy.....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden.....50%

Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847..₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor .....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2.50

Cutters— Glass—
H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward 40%

Meat and Food—
American 30%

Nos.....	1	2	3	4	B	5
Each.....	$5	$7	$10	$25	$50	$60

Enterprise .....25@25&7½%

Nos.....	5	10	12	22	32
Each.....	$2	$3	$2.75	$4.50	$6

Dixon's .....₱ doz. 30&10@40%

Nos.....	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal .....40&10@50%
Little Giant.....₱ doz. 33⅓@40%

Nos.....	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....40%
New Triumph No. 605, ₱ doz. $24.00.....30&10@40%
Russwin Food, No. 1, $24.00; No. 2, $27.00 .....45&10&10%
Woodruff's .....₱ doz. 30&10@40%

Nos.....	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater .....₱ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..₱ gr. $18@$20
Slaw Cutters, 2 Knife..₱ gr. $22@$36

Tobacco—
All Iron, Cheap..doz. $1.25@$1.50
Enterprise .....25@30%
National, ₱ doz., No. 1, $21; No. 2, $18 .....40%
Sargent's, ₱ doz., No. 2.....60%
Sargent's, Nos. 12 and 21.....60&10%

Washer—
Appleton's, ₱ doz., $16.00....50&10&10%

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger..per doz., $9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers .....₱ doz. $6.25
Iwan's Perfection Post Hole Digger..₱ doz. $8.25
Iwan's Split Handle Post Hole Diggers .....₱ doz. $7.25
Kohler's Universal.....₱ doz. $15.00
Kohler's Little Giant.....₱ doz. $12.00
Kohler's Hercules.....₱ doz. $10.00
Kohler's Invincible.....₱ doz. $9.00
Kohler's Rival.....₱ doz. $8.00
Kohler's Pioneer.....₱ doz. $7.20
Never-Break Post Hole Diggers, ₱ doz., $24.00.....60%
Samson, ₱ doz. $34.00.....25%

Dividers—See *Compasses.*

Doors, Screen—
Phillips', style E, ⅞ in....₱ doz. $10.50
Phillips', style 077, ⅞ in....₱ doz. $8.00
Phillips', style x-y, ⅞ in....₱ doz. $11.00

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ₱ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—
Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—
Common Blacksmiths' Drill, each .....$1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P. S. & W.....40&5%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....33⅓%
Ratchet, Whitney's, P. S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—
Bit Stock.....60&10@60&10&10%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—
Screw D'ver Bits, per doz..45@60¢
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 .....40%
Buck Bros.' Screw Driver Bits.....30%
Champion 50%
Edson 60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet.....35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood 40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 20 and 21...25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Never Turn.....60%
New England Specialty Co.....50%
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10%
Nos. 50 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles..60@60&10&10%
No. 86.....70@70&10&10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....20&10&10%

Eave Trough, Galvanized—

Territory.	*L. C. L.*
A. Eastern	*80&10&5%*
B. Eastern	*80&10&10%*
Central	*80&10&5%*
Southern	*80%*
S. Western	*75&10&10%*

Terms.—2% for cash. Factory shipments generally delivered
See also Conductor Pipe and Elbows.

Elbows and Shoes—
Factory shipments:
Plain Rd., and Cor., 2, 3 and ½ in.....75%
Plain Rd., and Cor., 5 and 6 in.....60%
Perfect Elbows (S., S. & Co.).....40%

Emery, Turkish—

	4 to 6	*5 to 150*	*Flour*
Kegs .....lb.	*5 ¢*	*5½¢*	*3½¢*
½ Kegs.....lb.	*5½¢*	*5¾¢*	*3¾¢*
Kegs .....lb.	*5 ¢*	*6 ¢*	
10-lb. cans, 10 in case.....	*6½¢*	*7 ¢*	*6 ¢*
10-lb. cans, less than 10.....	*10 ¢*	*10 ¢*	*8 ¢*

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Walling's 45%

Cord and Weight—
Ives 40%

Faucets—

Cork Lined.....50@50&10%
Metallic Key, Leather Lined..70@70&10%
Red Cedar.....40@40&10%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined...50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—

See *Plates, Felloe.*

Files— Domestic—

List revised Nov. 1, 1899.
Best Brands.....70&10@75&5%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—

Stubs' Tapers, Stubs' list, July 2½, '97.....30%

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103.....$4.00
Special, No. 104.....$4.00
Fusible Links.....$0.25
Expansion Bolts.....50&10%

Grindstone—

Net Prices:

Inch	15	17	19	21	24
Per doz.	$2.15	2.85	3.25	3.75	4.50

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's.....70%
Stowell's Giant Grindstone Hanger..℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures, Light..60&10%

Fodder Squeezers—

See *Compressors.*

Forks—

Base Discounts Aug. 1, 1899, list:
Hay, 2 tine.....50&10&5%
Boys' & Fish, 2 tine..50&10&5%
Hay & Boys', 3 tine....60&5%
Hay & Boys', 4 tine....66⅔%
Champion Hay.....66⅔%
Hay & Header, long 3 tine..65%
Header, 4 tine.....65%
Barley 4 & 5 tine, Steel..60&20%
Manure, 4 tine.....60&15&2½%
Manure, 5 & 6 tine..66⅔&2½%
Spading.....70&2½%
Potato Digger, 6 tine....60&10%
Sugar Beet.....40&10%
Coke & Coal.....40&10%
Heavy Mill & Street.....65%
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—

White, S'g't Bar, per doz..75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	1	2	3	4	6
Each	$1.25	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
} Extra 2½% 10%

Gates, Molasses and Oil—

Stebbins' Pattern..80&10@80&10&5%

Gauges—

Marking, Mortise, &c.....50&10&5@50&10&10&5%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....20@20&10&10%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....30&10%

Gimlets— Single Cut—

Nail, Metal, Asst., gro..$1.40@1.50
Spike, Metal, Asst., gro.$2.80@3.50
Nail, Wood Handled, Assorted, gro. $1.75@2.00
Spike, Wood Handled, Assorted, gro. $1.25@1.50

Glass, American Window

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush..25@50%
Cans (½ pts., pts., qts., ½ gal., gal.).....25@48%
International Glue Co. (Martin's)....40&10%

Grease, Axle—

Common Grade....*gro. $4.50@5.50*
Dixon's Everlasting..10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz. 1 lb, $1.20; 2 lb, $2.00

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—

Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00 } 25
Pike Mower and Tool Grinder, each.....$6.00 } 25
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....$3.25

Halters and Ties—

Covert Mfg. Co.:
Web.....45%
Jute Rope.....50&5%
Sisal Rope.....35&5%
Cotton Rope.....45&2%
Hemp Rope.....45&2%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties.70%
Sisal Rope Ties.....60&10%

Hammers—

Handled Hammers—

Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40@40&10&10%
Peck, Stow & Wilcox.....40&10&5%
Fayette R. Plumb:
Plumb, A. E. Nail.....33⅓&7½@33⅓&10&7½%
Engineers' and B. S. Hand.....50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—

Under 3 lb., per lb. 50¢.....80&10&10@85%
3 to 5 lb., per lb. 40¢.....80&10&10@85%
Over 5 lb., per lb 30¢..85@85&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—

Agricultural Tool Handles

Axe, Pick, &c.....60@60&10%
Hoe, Rake, &c.....45@50&5%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50&5%
D Handles.....40%

Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—

Auger, assorted...*gro. $2.50@2.85*
Brad Awl.....*gro. $1.65@1.85*
Chisel Handles:
Apple Tanged Firmer, gro. assorted.....$2.40@2.65
Hickory Tanged Firmer, gro. assorted.....$2.15@2.40
Apple Socket Firmer, gro. assorted.....$1.75@1.95
Hickory Socket Firmer, gro. assorted.....$1.45@1.60
Hickory Socket Framing, gro. assorted.....$1.60@1.75
File, assorted.....gro. *$1.30@1.40*
Hammer, Hatchet, Axe, &c.
60&10@60&10&10%
Hand Saw, Varnished, doz. 80@85¢; Not Varnished..65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle....℔ gro. $0.85@$1.50

Hangers—

NOTE—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c
Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Single Doz.	$0.90	1.25	1.60	1.95	3.50

Barn Door, New England Pattern, Check Back, Regular:

Inch	3	4	5	6
Single Doz.	$1.30	1.85	2.50	3.00

Allitn Mfg. Co.:
Reliable, No. 1.....per doz. $8.00
Reliable, No. 2.....per doz. $6.60
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10&5%
Roller Bearing.....70&5%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.60&10&2½%
Hinged.....net $6.40
Covered.....60&10%
Special.....70&5%
Lawrence Bros.:
Advance.....60&10%
Cleveland.....70&5%
Clipper, No. 75.....60%
Crown.....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant.....60&5%
Hummer.....70&5%
New York.....60&10%
Peerless.....70&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60%
Richards Mfg. Co.:
Pioneer Wood Track No. 3..$2.15
Ball B'r'g St'l Track No. 10.$2.40
Roller B'r'g St'l Track No. 12.$2.30
Ball B'r'g St'l Track No. 13.$2.40
Roller B'r'g St'l Track No. 14.$2.30
Hero, Adj. Track, No. 19.....50%
Adjustable Track Tandem Trolley Track No. 16.....50%
Seal, Steel Track No. 8.....$2.40
Auto Adj. Track No. 22..40&10%
Trolley B. D. No. 17.....$1.40
Trolley F. D. No. 120.....$2.35
Trolley F. D. No. 121.....$2.45
Trolley F. D. No. 150.....$2.60
Safety Underwriters F. D. No. 101.....$2.25
Tandem No. 44.....70&5%
Trolley F. D. No. 151.....$3.00
Palace, Adjustable Track No. 132.....40&10%
Royal, Adjustable Track No. 122.....40&10%
Ives' Wood Track No. 1.....$2.15
Trolley B. D. No. 20.....$1.35
Trolley B. D. No. 24.....$1.45
Trolley B. D. No. 27.....$1.50
Trolley B. D. No. 28.....$1.66
Roller Bearings Nos. 39, 40, 41, 43, 44.....70&5%
Anti-friction No. 42.....60&10%
Hinged Tandem No. 48.....60%
Folding Door B. B. Swivel No. 135.....30%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....50%
Freight Car Door.....50%
Interstate.....60&10%
Lundy Parlor Door.....50&10%
Magic.....80%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door.....50&10%
Railroad.....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 401, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle.....70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot.....60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives Wood Track.....60&10%
L. T. Roller Bearing....60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet.....50%
Wilcox Auditorium Ball B'r'g.20%
Wilcox Barn Trolley No. 123..40%
Wilcox Elv. Door, Nos. 112 and 122½.....50%
Wilcox Elv. Door, No. 132....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing..40%
Wilcox Wideman Narrow Gauge Ball Bearing.....40%
For Track, see Rail.

Extra 5&10% often given.

Hangers— Garment—

Pullman Trouser, No. 1....℔ gro. $9.00
Pullman Trouser, No. 4....℔ gro. $24.00
Victor Folding.....℔ gro. $9.60
Western, W. G. Co.....70&10%

Gate—

Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

Hasps—

McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—

Regular list, first quality..40@..%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.85	1.75	3.50

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.75	.70	.65	

Mortise Reversible Shutter (Buffalo, &c.):

No.	1	1½	2
Doz. pair	$0.75	.70	.65

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Parker.....70&75%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 5, 11 and 13..75%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.80; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55.....70&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75%
1868, Old Pat'n, Nos. 1, 3 & 5....75%
Tip Pat'n, Nos. 1, 3 & 5.....75%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with L'Ves.	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	.35

New England:
With Latch.....*doz.*....@$2.00
Without Latch...*doz.*....@$1.60
Reversible Self-Closing:
With Latch.....*doz.*....@$1.75
Without Latch...*doz.*....@$1.35
Western:
With Latch.....*doz.* $1.75
Without Latch.....*doz.* $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets.

Nos.	1	2	3
Hinges with Latches.	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—

Holdback Cast Iron.....*gro. $9.00@$9.50*
Non-Holdback, Cast Iron.....*gro. $8.00@$8.50*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges.....40%
Bommer Spring Hinges.....40%
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7.....℔ gr. $19.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.50
Oxford, new list.....30%
Lawson Mfg. Co., Matchless.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Chief Ball B'r'g Floor Hinge.50%
Ohio Detachable Screen Door Hinge.....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable.....℔ gr. $19.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k..℔ gro. pr.$9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list March 15, 1901:
Light Strap Hinges..80&5%
H'vy Strap H'g's.80&20&10%
Light T Hinges...75&10&5%
Heavy T Hinges....75&5%
Extra H'vy T H'g's.80&20%
Hinge Hasps.....70%
Cor. Heavy Strap.80&20&10%
Cor. Ex. Heavy T...80&20%
Extra 3 or 4 tens

Screw Hook and Strap.
6 to 12 in..lb. 3¼ ¢
1½ to 20 in..lb. 3 ¢
22 to 36 in..lb. 2¾ ¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6 ¢
⅝-inch .....lb. 7 ¢
½-inch .....lb. 9 ¢

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers....35%

Hods— Coal—

	Per doz.			
Inch	15	16	17	18
Galv. Open	$2.50	2.75	3.00	3.25
Jap. Open	$1.90	2.10	2.25	2.55
Galv. Funnel	$3.00	3.30	3 60	3.99
Jap. Funnel	$2.45	2.65	2.85	3.30

Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar.....each $1.45
Steel Brick.....each $1.10

Hoes— Eye—

Scovil and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovil.....35%

Handled—

August 1, 1899, list.
Field and Garden.....70&10%
Smith's Patent.....50%
Meadow & Rhode Island..75%
Black Diamond.....70&10%
Mortar and Street...70&10&10%
Planters' .....75&12½%
Cotton .....70&10&10%
Cotton Chopper.....75&12½%
Weeding Hocs.....66⅔&15%
Steel Weeders.....66⅔&15%
Malleable Weeders....66⅔&15%
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe..℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....℔ doz. net, $4.35
W. & C. L'ting Shuffle Hoe, ℔ doz. $4.85

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ℔ doz. $24.00.....45&10%

Door—

Empire.....50%
Bardsley's.....45%

File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

Hooks—Cast Iron—

Bird Cage, Reading.....60%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List.....50&10&10%
Clothes Line, Reading List.....60&10%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....66⅔%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—

Belt .....80&10@..%
Wire C. & H. Hooks:.....
75&10@75&10&5%
Atlas, Coat and Hat:
Single Cases.....75%
10 Case Lots.....75&10%
Columbian Hdw. Co., Gem.....60&10%
Parker Wire Goods Co., King..75&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme .....60&10%
Chief 70%
Crown .....70&10%
Czar 65%
V Brace.....70&10%
Czar Harness.....50&10%

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton .....doz. $1.05@$1.25
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—

Hooks, Bench, see Stops, Bench.
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25

Grass....Nos.	1	2	3	4
Best	$1.50	1.75	2.00	
Common	$1.30	1.40	1.60	

Potato and Manure.....60&15%
Whiffletree .....lb. 5¾@6¢
Hooks and Eyes:
Brass .....60&10¢10@70%
Malleable Iron....70&5@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....35%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horse.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition .....ft. 4½@a 5 ¢
3-ply Standard....ft. 6½@a 7 ¢
4-ply Standard....ft. 7½@a 8 ¢
3-ply extra.....ft. 8½@a 9 ¢
4-ply extra.....ft. 10 @10½¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 6 @ 7 ¢
Fair Quality.....ft. 8 @ 9 ¢

Irons— Sad—

From 4 to 10.....lb. 2¾@3 ¢
B. B. Sad Irons.....lb. 3¼@3½¢
Chinese Laundry....lb. 4¾@5 ¢
Chinese Sad.....lb. 4 @4¼¢
Mrs. Potts', cents per set:

Nos.	50	55	60	65
Jap'd Tops	62	59	72	69
Tin'd Tops	65	62	75	72

New England Pressing..lb. 3¾@4¼¢

Pinking—

Pinking Irons.....doz. 50@60¢

Soldering—

Soldering Coppers, 2½ & 3..19@20¢
1½ & 2.....21@22¢

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&5%
Steel .....45&2%
Covert's Saddlery Works:
Daisy .....60&10%
Victor 60%
Lockport 50%
Lane's Steel.....30&10&5%
Richards' Tiger Steel, No. 130.....40%

Kettles—

Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Smith & Hemenway Co.....40&10%
Wilkinson Shear & Cutlery Co....50%

Corn—

Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....70&10@75&10%
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's .....70&10&2½%
Watrous 16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge.....per doz. $5.50
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Mincing—

Buffalo .....℔ gro. $13.00

Miscellaneous—

Farriers' .....doz. $3.00@3.25
Wostenholm's .....℔ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber tip.....gro. $1.10@1.15
Carriage, Jap., all sizes.....
gro. 40@45¢
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd.....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—

See *Belting, Leather.*

Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....40%
Climax Shelf, No. 113.....40%
Trolley, No. 109.....40%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading 60%
Sargent's .....50&10%

Lanterns—Tubular—

Regular Tubular, No. 0.....
doz. $4.35@4.75
Lift Tubular, No. 0..doz. $4.75@5.25
Hinge Tubular, No. 0.....
doz. $4.75@5.25
Other Styles.....40&10@40&10&5%

Bull's Eye Police—

No. 1, 2¾-inch.....$2.50@2.75
No. 2, 3-inch.....$2.75@3.00

Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—

Roggin's Latches, with screw..
doz. 35@40¢

Door—

Richards' Bull Dog, Heavy, No. 125.40%
Richards' Trump, No. 127.....50%

Leaders, Cattle—

Small .....doz. 55¢; large, 60¢
Covert Mfg. Co.....35%

Lifters, Transom—

R. & E.....33⅓%

Lines—

	Wire Clothes, Nos.	18	19	20
100 feet		$2.20	2.00	1.65
75 feet		$1.80	1.70	1.30

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50 .....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Anniston Waterproof Clothes, 50 ft., ℔ gro., $24.00; Gilt Edge, $22.00; Air Line, $22.00; Acme, $17.00; Alabama, $15.00; Empire, $14.00; Advance, $13.50; Oriole, $20.00; Albemarle, $13.50; Eclipse, $12.50; Chicago, $11.00; Standard, $10.00; Columbia, $8.50; Allston, $12.50; Calhoun, $11.00.

Locks— Cabinet—

Cabinet Locks...33⅓@33⅓&7½%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....45&20%
R. & E. Mfg. Co.....40
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—

Stowell's 50%

Padlocks—

Wrought Iron....75&10&5@80&5%
R. & E. Mfg. Co. Wrought Steel and Brass .....75@75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass.....62½%
Crescent .....50&10%
Iron 62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock 40%
Wrought Brass and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading 60%

Machines—Boring—

Com. Upr't, without Augers.$2.00
Com. Ang'l'r, without Augers.$2.25
Without Augers.

R. & E. Mfg. Co.: Upright.		Angular.
Improved No. 3..	$4.25	No. 1..$5.00
Improved No. 4..	3.75	No. 2.. 3.38
Improved No. 5..	2.75	
Jennings' Nos. 1 and 4		35&5%
Millers' Falls.....		5.75
Snell's, Rice's Pat.	2.50	2.75

Corking—

Reisinger Invincible Hand Power.....
℔ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake 20%

Ice Cutting—

Chandler's 12½%

Washing—

Boss Washing Machine Co.: Per doz.
Champion Rotary Banner No. 1..$54.00
Standard Champion No. 1.....$48.00
Standard Perfection.....$26.00
Cinti Square Western.....$30.00
Uneeda American, Round.....$29.00

Mallets—

Hickory .....45&5@50%
Lignumvitæ .....45&5@50%
Tinners' Hickory and Apple-wood .....doz. 50@55%

Mangers, Stable—

Swett Iron Works.....50%

Mashers, Vegetable—

Western, W. G. Co., Potato....60&10%

Mats, Door—

Elastic Steel (W. G. Co.).....10%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheap .....all sizes, $1.75@2.00
Good .....all sizes, $2.25@2.50

	10	*12*	*14*	*16*-in.
High Grade..	4.25	4.50	4.75	5.00
Continental				60&5%
Great American				70%
Great American Ball B'r'g, new list.				70%
Quaker City				70%
Pennsylvania				60&5%
Pennsylvania, Jr., Ball Bearing				60%
Pennsylvania Golf				50%
Pennsylvania Horse				33⅓&2%
Pennsylvania Pony				40&5%

Philadelphia:
Styles M., S., C. K., T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.50%

Nails—

Wire Nails and Brads, Papered, List July 20, 1899.....90@90&5%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Champlain	28	26	25	24	25	.....50%
Coleman	13	12	12	11	11	.....net
New Haven	23	21	20	19	18	...40&5%
Putnam	23	21	20	19	18	...33⅓%
New Putnam	19	18	17	16	16	..10&10%

Western .....℔ lb 8½¢
Jobbers' Special Brands.....
per lb. 8@8½¢

Picture—

	1½	*2*	*2½*	*3*	*3½ in.*
Brass H'd.	.45	.60	.70	.95	1.00 gro
Por. Head...	1.10	1.10	1.10	..	gro

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: *Off list.*
Mfrs. or U. S. Standard.
Square, plain.....$5.10
Hexagon, plain.....$5.60
Square, C. T. & R.....$5.30
Hexagon, C. T. & R.....$6.00
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square Blank.....$5.80
Hexagon Blank.....$6.30
Square Tapped.....$5.80
Hexagon Tapped.....$6.30

Oakum—

Best or Government.....lb. 6½¢
Navy .....lb. 5 ¢
U. S. Navy.....lb. 6 ¢
Plumbers' Spun Oakum.....2½¢
In carload lots ¼¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper.....50&10%
Tin or Steel.....65&10%
Zinc .....65&10%
Chase or Parago:
Brass and Copper...45&10@50%
Tin or Steel.....65&10%
Zinc .....65&10%
Malleable, Hammers' Imp'ed, No. 1, $3.60; No. 2, $4; No. 3, $4.40. ℔ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can—

French .....doz. 35¢
Iron Handle.....Per doz. 25@27¢
Sprague, Iron Handle
Per doz. 35@40¢
Sardine Scissors...doz. $1.75@$3.00
National 50%
Stowell's Sprague.....℔ doz. 35@45¢

Egg—

Nickel Plate.....℔ doz., $2.00
Silver Plate.....℔ doz., $4.00

Packing—

Asbestos Packing, Wick and Rope .....lb. 14½@15¢

Rubber—

Sheet, C. I.....8@10¢
Sheet, C. O. S.....9@13¢
Sheet, C. B. S.....10@14¢
Sheet, Pure Gum.....50@65¢
Sheet, Red.....40@50¢
Jenkins' '96, ℔ lb 80¢.....25@25&5%

Miscellaneous—

American Packing...lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@12½¢
Jute .....lb. 4@ 4½¢
Russia Packing.....lb. 8@11 ¢

Pails, Creamery—

S. S. & Co., with gauges—No. 1, $6.25; No. 2, $6.50 ℔ doz.

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List...60&10@60&10&10%

Fry—

Common Lipped:

Nos.	1	2	3	4	5
Per doz..	$0.75	0.80	0.90	1.10	1.30

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz.	$1.95	2.25	2.80	3.15

Roasting and Baking—

Regal, S., S. & Co., ℔ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:

No.	40	50	60	140	150	160
	$30.00	35.90	42.00	34.00	39.00	46.00

Paper—Building Paper

Asbestos: lb.
Building Felt.....2¾¢
Mill Board, sheet, 40x40 in..3½¢
Mill Board, roll, thicker than 1-16 inch.....3½¢
Mill Board, 1-16 inch thick and less.....2½¢
Per roll
Rosin Sized Sheathing: 500 sq. ft.
Light weight, 25 lbs. to roll $0.40@0.45
Medium weight, 30 lbs. to roll, $0.45@0.50
Heavy weight, 40 lbs. to roll.. $0.65@0.70
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton.....$15.00
Red Rope Roofing, 250 sq. ft. per roll.....$1.75
NOTE.—These goods are often sold at delivered prices.

Tarred Paper—

1 ply (roll 300 sq. ft.), ton.... $32.50@35.00
2 ply, roll 108 sq. ft.....55@60¢
3 ply, roll 108 sq. ft.....78@80¢
Slater's Felt (roll 500 sq. ft.).75¢

NOTE.—Above prices often include delivery, and are for Eastern territory, where prices are controlled by agreement between the manufacturers. In open territory much lower prices are current.

R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—

Flint Paper and Cloth.60@60&10%
Garnet Paper and Cloth....25%
Emery Paper and Cl'h.50&10@60%

Parers— Apple—

Advance .....℔ doz. $4.00
Baldwin .....℔ doz. $4.00
Bonanza Improved.....each $6.50
Daisy .....℔ doz. $4.00
Dandy .....each $7.50
Eureka Improved.....each $20.00
Family Bay State.....℔ doz. $15.00
Improved Bay State.....℔ doz. $36.00
Little Star.....℔ doz. $5.00
New Lightning.....℔ doz. $7.00
Reading 72.....℔ doz. $3.25
Reading 78.....℔ doz. $6.25
Rocking Table.....℔ doz. $6.20
Turn Table '98.....℔ doz. $6.00
White Mountain.....℔ doz. $5.00

Potato—

Saratoga .....℔ doz. $7.00
White Mountain.....℔ doz. $6.00

Picks and Mattocks—

List Feb. 23, 1899..70&10@75&10%

Pinking Irons—

See *Irons, Pinking.*

Pins, Escutcheon—

Brass .....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—

Standard, 2-6 in.....50&10%
Extra Heavy, 2-6 in.....65%
Fittings 70%

Pipe, Merchant—

Carload Lots.

	Steel.		*Iron.*	
	Blk.	*Galv.*	*Blk.*	*Galv.*
⅛ & ¼ in..	*69%*	*53%*	*67*	*51*
⅜ & ½ in..	*73%*	*61%*	*71*	*59*
¾ to 6 in..	*77%*	*67%*	*75½%*	*65½%*
7 to 12 in..	*72%*	*57%*	*70½%*	*55*

Pipe, Sewer—

Jobbers' Prices—

Standard Pipe and Fittings, 2 to 24 in.:
New England.....67%
New York and New Jersey.70%
Maryland, Delaware, E. Pa.72%
West. Pa. and West Va...73%
Virginia 75%
Ohio, Michigan and Ky....75%
Indiana 77%

NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—

Wood Planes—

Bench, First qual...40&5@40&10%
Bench, Second qual.50&5@50&10%
Molding .....33⅓&5@33⅓&10%
Bailey's (Stanley R. & L. Co.).....5&10@25&10&10%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality.....50@50&10%
Molding .....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's 60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding .....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union 60%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....25&10@25&10&10%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Ohio Tool Co.'s Iron Planes.....60
Sargent's .....60&10%
Union 60%

Plane Irons—

Wood Bench Plane Irons.....30&5@30&10%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co..20&10@20&10&10%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse.....℔ doz. $8.50

Plates—

Felloe .....lb. 3¾@4¢
Self-Sealing Pie Plates (S., S. & Co.). ℔ doz. $2.00.....50%

Pliers and Nippers—

Button Pliers.....75&10@80%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $3.00 $3.75
Acme Nippers.....50@50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's 60
Improved Button.....60&10%
Stub's Pattern.....50
Combination and others.....33⅓%
Heller's Farriers' Nippers. Pincers and Tools.....40&10@40&10&10%
P., S. & W. Tinners' Cutting Nippers .....30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.10@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70
Disston's Pocket Levels.....70
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable .....40&7½%
Stanley R. & L. Co..30&10@30&10&10%
Stanley's Duplex.....20@20&10&10%
Woods' Extension.....33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—

Bulk and 1-lb. papers....lb. 8 ¢
½-lb. papers.....lb. 8¾ ¢
¼-lb. papers.....lb. 9½¢

Pokes, Animal—

Ft. Madison Hawkeye.....℔ doz. $3.25
Ft. Madison Western.....℔ doz. $4.00

Police Goods—

Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.72....40%
Prestoline Paste.....40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25; ℔ gro., $12.00.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75; ℔ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ℔ doz. $2.00

Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans, ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $4.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....℔ doz. $1.00
Black Silk, 5 oz. box.....℔ doz. $0.75
Black Silk, ½ pt. liq.....℔ doz. $1.00

Poppers, Corn—

1 qt., Square.....gro. $9.00
1 qt., Round.....gro. $10.00
1½ qt., Square.....gro. $11.00
2 qt., Square.....gro. $13.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 48¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—

See *Parers, Potato.*

Pots, Glue—

Enameled 40%
Tinned 35%

Powder—

In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Robin Hood Sm'less Shot Gun..50&20%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

Seal Presses—

Morrill's No. 1, ℔ doz., $20.00.....50%

Pruning Hooks and Shears

See *Shears.*

Pullers, Cork—

Invincible Cork Puller.....$21.00

Pullers, Nail—

Cyclops 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Pelican, ℔ doz. $9.00.....40&10%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ℔ doz. $6.00
Diamond B, No. 3, case lots..... ℔ doz. $5.50
Giant No. 1, ℔ doz. $18; No. 2, $16.50; No. 3, $15.....40%

Pulleys, Single Wheel—

Inch	2	2½	3
Awning, doz.	*$0.55*	*.85*	*1.15*

Hay Fork, Swivel or Solid Eye. doz., ½ in., $1.05; 5 in., $1.35

Inch	2	2½	2½
Hot House, doz.	*$0.70*	*.90*	*1.25*
Inch	*1¼*	*1½*	*1¾*	*2*
Screw, doz	*$0.16*	*.19*	*.23*	*.30*
Inch	*1¾*	*2*	*2¼*	*2½*
Side, doz	*$0.30*	*.40*	*.55*	*.61*
Inch	*1½*	*1¾*	*2*	*2½*
Tackle, doz	*$0.30*	*.42*	*.58*	*1.09*

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60
Side, Anti-Friction.....60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1¾ and 2 in.....16@19¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in., 16@19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50
Grand Rapids All Steel Noiseless..50
Ideal .....70&10
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—

Cistern .....60@60&10%
Pitcher Spout.....80@80&10%
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list)..50&10%
Barnes' Pitcher Spout.....80%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $7.20
Flint & Walling's, Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list) .....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$7.20
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch...	*2*	*2¼*	*2½*	*2¾*
	$2.20	*2.50*	*2.75*	*3.00*
Inch...	*3*	*3¼*	*3½*	*3¾*	*4*
	$3.30	*3.60*	*3.85*	*4.10*	*4.40*

Plunger Cup Leathers—Per 100:

Inch...	*2½*	*3*	*3½*	*4*
	$2.75	*3.85*	*5.00*	*6.00*

Punches—

Saddlers' or Drive, good..... doz. 50@75¢
Spring, single tube, good quality .....$1.75@2.00
Revolving (4 tubes) ..... doz. $3.50@3.75
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55
Morrill's No. 1 (A.B.C.), ℔ doz. $15.50
No. 2, ℔ doz. $22.50.....50
Hercules, each $7.50.....50%
Niagara Hollow Punches.....40
Niagara Solid Punches.....55&10%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co..35&5%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....60%

Rail—Barn Door, &c.—

Cast Iron Barn Door; Flange Screw Holes for Rd. Groove Wheels:

½	⅝	¾ in.	
$1.70	*$2.10*	*$3.00*	*100 feet.*

Angular for Sq. Groove Wheels:

Small.	*Med.*	*Large.*	
$1.50	*$1.90*	*$2.60*	*100 feet.*

Sliding Door, Iron Painted.... 2¼@2¾¢
Sliding Door, Wrought Brass, 1¼ in., lb., 36¢ 90%
Allith Mfg. Co.:
No. 1, Reliable Hgr. Track, ℔ ft. 5½¢
No. 2, Reliable Hgr. Track, ℔ ft. 7¢
Cronk's:
Double Braced Steel Rail....℔ ft. 3¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ℔ 100 ft., 1 in., $3.70; 1¼ in., $4.40.
O. N. T. ℔ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
℔ 100 ft. No. 201, $4.00; No. 202, $4.40.
New York, 1 x 3-16 in., ℔ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ℔ ft., 11¢..50%
None Better..... ℔ ft. 3¾¢
Standard ..... ℔ ft. 4 ¢
Myers' Stayon Track.....60%
Richards' Mfg. Co.:
Common 1 x 3-16 in., $2.75; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail.....$4.40
Fire Door Track, ℔ ft., 2½ x ⅝, 15¢; 3½ x ⅝, 6¢.
Lag Screw Rail, No. 65.....40%
Gauge Trolley Track, ℔ ft., No. 31, 10¢; No. 32, 15¢; No. 33, 24¢.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard 60%
Stowell's:
Cast Rail.....℔ ft. 1¾¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in....℔ ft. 3¢
Wrought Bracket, 1½ x 5-16..℔ ft. 7¢
Swett's Hylo, ℔ ft. 11¢.....60%
P. L. B. Steel Rail.....℔ 100 ft. $3.00
No. 0, 1 x 3-16.....℔ 100 ft. $2.75

Rakes—

Net Prices, Malleable Rakes:

10	*12*	*14 16-tooth*
Shank ...$1.50	*1.60*	*1.75*	*1.85*
Socket ...$1.65	*1.80*	*1.95*	*2.10*

Steel, Garden and Gravel, Aug. 1, '99, List.....70%
Malleable Iron, Garden...70&10%
Lawn Rakes, M't'l Head, per doz.
20 teeth.....$3.25@3.50
24 teeth.....$3.50@3.75
Weddless Steel Garden.....75&5%
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ℔ doz., net.....$4.25
Kohler's:
Lawn Queen, 20-tooth.....℔ doz. $3.45
Lawn Queen, 24-tooth.....℔ doz. $3.60
Paragon, 20-tooth.....℔ doz. $2.75
Paragon, 24-tooth.....℔ doz. $3.00
Steel Garden, 14-tooth....℔ doz. $2.88
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

Rasps, Horse—

Disston's 75%
Heller Bros.....70&5@70&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—

Borasic 60%
Fox Razors, No. 42...℔ doz. $20.00
Fox Razors, No. 44..℔ doz. $20.00
Fox Razors, No. 82, Platina.... ℔ doz. $25.00 } 40%
Red Devil.....60%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—

Silberstein 40%

Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02304 N.....33⅓%
02304 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1905.* 40@10&5%

Black Jap
White Jap
Bronzed
Nickel Plated
Electro Plated

Revolvers—

Single Action.....85@90¢
Double Action, except 44 cal..$1.90
Double Action, 44 caliber....$2 05
Automatic $3 60
Hammerless $4.10

NOTE.—Jobbers frequently cut the above prices of manufacturers for small trade.

Riddles, Hardware Grade

16 in.....per doz. $2.25@$2.50
17 in.....per doz. $2.50@$2.75
18 in.....per doz. $2.75@$3.00

Rings and Ringers—

Bull Rings—

	2	2½	3 inch.
Steel	*$0.70*	*0.75*	*0.80*	*doz.*
Copper	*$1.00*	*1.15*	*1.40*	*doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ℔ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—

Hill's Rings, gro. boxes, $4.00@4.25
Hill's Ringers, Gray Iron..... doz. 50@55¢
Hill's Ringers, Malleable Iron . doz. 70@75¢
Blair's Rings...per gro. $4.75@5.00
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro. $5.00@5.25
Brown's Ringers.per doz. $0.65@ .70

Rivets and Burrs—

Copper .....60&5@60&10%
Iron or Steel.....75&5@75&10%

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay.....72¢
Cronk's Brinkerhoff.....90¢
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.50%
O. K. Adj. and Reversible, No. 58.50%
Lag Screw, Nos. 55 and 57.....50%
Fire Door, No. 59.....40%
Favorite, No. 54.....40%
Stowell's Barn Door Stay..℔ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....℔ doz. 65¢
Hinge Adjustable Stay.....℔ doz. 90¢

Rope—

Manila, 7-16 in. diam. and larger:
Mixed .....lb. 9½@10½¢
Pure .....lb. 11½@12 ¢
Manila, Hay, Hide and Bale Ropes, Medium and Coarse.. lb. 9½@10½¢
Sisal, 7-16 in. diam. and larger:
Mixed .....lb. 7 @ 7¼¢
Pure .....lb. 8½¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed .....lb. 7 ¢
Pure .....lb. 8½¢

Sisal, Tarred, Medium Lath Yarn:
Mixed ..... lb. 7 ¢
Pure ..... lb. 8½¢
Cotton Rope: Lb.
Best, ¼-in. and larger ..... 15½¢
Medium, ½-in. and larger ..... 11½¢
Common, ¼-in. and larger ..... 10½¢
Jute Rope:
Thread No. 1, ¼-in. & up ..... lb. 6 ¢
Thread No. 2, ¼-in & up ..... lb. 5½¢
Wool Twine ..... lb. 5½¢
Old Colony Manila Transmission Rope ..... ℔ lb 17½¢

Wire Rope—
Galvanized ..... 47½&5%
Plain ..... 55&5%

Ropes, Hammocks—
Covert Mfg. Co.:
Jute ..... 50&5%
Sisal ..... 35&5%
Covert Saddlery Works ..... 60&5%

Rules—
Boxwood ..... 60&10&10%
Ivory ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35@35&10&10%
Miscellaneous ..... 50@50&10&10%
Combination ..... 55@55&10%
Stationers' ..... 10@10&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber 70%
Stanley R. & L. Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35@35&10&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular 50%
Band ..... 50&10@60%
Cross Cuts ..... 35&5%
Mulay, Mill and Drag 50%
One-Man Saw 40%
Wood Saws 40%
Hand, Compass, &c 40%
Chapin-Stephens Co.:
Turning Saws and Frames ..... 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&5%
Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 14 in. wide 60%
Band, ⅛ to 1⅝ 60%
Crosscuts 50%
Narrow Crosscuts 55%
Mulay, Mill and Drag 50%
Framed Woodsaws 35%
Woodsaw Blades 35%
Woodsaw Rods 25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c 25%
Butcher Saws and Blades 35%
C. E. Jennings & Co.'s:
Back Saws 25%
Butcher Saws 30%
Compass and Key Hole Saws ..... 35&5%
Framed Wood Saws 30%
Hand Saws ..... 20&2½%
Wood Saw Blades 35%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Peace & Richardson's Hand Saws 30%
Simonds':
Circular Saws 50%
Crescent Ground Cross Cut Saws 35%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws 50%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c ..... 25@25&7½%
Wood Saws ..... 35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws ..... 40&10@50%
Butcher Saws Blades ..... 35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saws—
Atkins' Hack Saw Blades A A A 25%
Disston's:
Concave Blades 25%
Keystone 40%
Hack Saw Frames 30%
Fitchburg File Works, The Best 25%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete ..... 40&7½%
Goodell's Hack Saw Blades 40%
Griffin's Hack Saw Frames ..... 35&5&10%
Griffin's Hack Saw Blades ..... 35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades 35%
Diamond Hack Saw Frames 50%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades 35%
Sterling Hack Saw Frames ..... 30&10&5%

Scroll—
Barnes' No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $4.00 ..... 15&10%

Scalers, Fish—
Covert's Saddlery Works ..... 60&10%

Scales—
Family, Turnbull's ..... 50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. ..... doz. $5.50
Two Platforms, ½ oz. to 8 lbs. ..... doz. $16.00
Union Platform, Plain ..... $1.70@1.90
Union Platform, Stpd ..... $1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales 50%
Chicago Scale Co.:
The "Little Detective" ..... 25 lbs 50%
Union or Family No. 2 ..... 60%
Portable Platform (reduced list) 50%
Wagon or Stock (reduced list) ..... 25@35%
"The Standard" Portables 50%
"The Standard" R. R. and Wagon 50%

Scrapers—
Box, 1 Handle ..... doz. $2.00@2.25
Box, 2 Handle ..... doz. $2.60@2.85
Ship ..... *Light, $2.00; Heavy, $4.50*
Adjustable Box Scraper (S. R. & L. Co.), $6.00 ..... 30@30&10%
Chapin-Stephens Co., Box ..... 50@50&10%

Screens, Window and Frames—
Flyer Pattern Screens ..... 60&5@60&5&2½%
Maine Screen Frames ..... 40&10&5%
Perfection Screens ..... 60&5@60&5&2½%
Phillips' Screen Frames ..... 60&5@60&5&2½%
See also *Doors.*

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75
Bench, W'd, Beech ..... doz. 30@30&5%
Hand, Wood ..... 30@30&5%
R. Bliss Mfg. Co., Hand ..... 30@30&10%
Chapin-Stephens Co., Hand ..... 30@30&10%
Ohio Tool Co., Bench and Hand 30%

Coach, Lag and Hand Rail—
Lag, Common Point, list Oct. 1, '99 ..... 80@80&10%
Coach and Lag, Gimlet Point, list Oct. 1, '99 ..... 75&10&5@80&5%
Hand Rail, list Jan. 1, '81 ..... 70&10@75%

Jack Screws—
Standard List ..... 75&10@80&5%
Millers Falls ..... 50&10&10%
Millers Falls, Roller ..... 50&10%
P., S. & W ..... 50@50&5%
Sargent ..... 70&10%
Swett Iron Works ..... 75&10@80&5%

Machine—
List Jan. 1, '98:
Flat or Round Head, Iron ..... 50@50&10%
Flat or Round Head, Brass ..... 50@50&10%

Set and Cap—
Set (Iron or Steel) ..80%
Sq. Hd. Cap 75%
Hex. Hd. Cap 75%
Rd. or Fillister Hd. Cap 65%
} *Extra 10&5 often given.*

Wood—
List July 23, 1903.
Manufacturers' printed discounts:
Flat Head, Iron ..... 87½&10@..%
Round Head, Iron ..... 85 &10@..%
Flat Head, Brass ..... 85 &10@..%
Round Head, Brass ..... 80 &10@..%
Flat Head, Bronze ..... 77½&10@..%
Round Head, Bronze ..... 75 &10@..%
Drive Screws ..... 87½&10%

Scroll Saws—
See *Saws, Scroll.*

Scythes—
Per doz.
Prices announced for next season:
Clipper Pattern, Grass $6.20
Full Polished, Clipper $6.75
Grain $8.00
Clipper, Grain $8.25
Weed and Bush $6.25

Seeders, Raisin—
Enterprise ..... 25@30%

Sets—Awl and Tool—
Brad Awl and Tool Sets:
Wood Handle, 10 Awls ..... doz. $2.00@2.25
Wood Handle, 14 Awls, 6 Tools ..... doz. $2.50@2.60
Aiken's Sets, Awl and Tools:
No. 20, ℔ doz. $10.00 ..... 50&10&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18 ..... 15&10%
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 30@30&10&10%

Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz sets $9.00

Nail—
Square ..... *per gro. $2.25@2.50*
Round, Blk. and Pol., assorted, gro. $1.80@2.00
Octagon ..... *gro. $3.50@3.75*
Buck Bros 27½%
Cannon's Diamond Point, ℔ gro. $12 ..... 25%
Mayhew's ..... ℔ gro. $9.00
Snell's Cannon's Diamond Point ..... ℔ gro. $7.20
Snell's Cor'gated, Cup Pt ..... ℔ gro. $7.20
Snell's Knurled, Cup Pt ..... ℔ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt. ℔ gro. $7.50

Rivet—
Regular list ..... 75@75&10%

Saw—
Aiken's:
Genuine ..... 50&10%
Imitation ..... 50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut 30%
Plate 20%
Disston's Star and Monarch 25%
Morrill's No. 1, $15.00 ..... 50%
Nos. 3 and 4, Cross Cut, $20.63 ..... 50%
No. 5, Mill, $30.00 ..... 50%
Nos. 10, 11, 95, $15.63 ..... 50%
No. 1 Old Style, $10.00 ..... 50%
Special, $16.25 ..... 50%
Giant Royal, Cross Cut ..... ℔ doz. $8.50
Royal, Hand ..... ℔ doz. $5.00
Taintor Positive ..... ℔ doz. $6.75

Shaving—
Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00

Sharpeners, Knife—
Chicago Wheel & Mfg. Co 65%

Shaves, Spoke—
Iron ..... *doz. $1.00@1.15*
Wood ..... *doz. $1.75@2.00*
Bailey's (Stanley R. & L. Co.) ..... 30@30&10&10%
Chapin-Stephens Co ..... 30@30&10&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%
Wood's F1 and F2 ..... 50%

Shears—

	7	8	9 in.	
Cast Iron				
Best	$16.00	18.00	20.00	*gro.*
Good	$13.00	15.00	17.00	*gro.*
Cheap	$5.00	6.00	7.00	*gro.*

Straight Trimmers, &c.:
Best quality, Jap ..... 70@70&10%
Best quality, Nickel ..... 60@60&10%
Fair quality, Jap ..... 80@80&5%
Fair quality, Nickel ..... 75@75&10%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
Wilkinson's Hedge, 1900 list 45%
Wilkinson's Branch, Lawn & Border 40%
Wilkinson's Sheep, 1900 list 50%

Tinners' Snips—
Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 40&10@50%
Forged Handles, Steel Blades, Berlin ..... 40@40&10%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in 50%
Niagara Snips 40%
P., S. & W. Co 20%

Pruning Shears and Tools
Cronk's Grape Shears 33⅓%
Cronk's Pruning Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook, ℔ doz. $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40@40&5%
Orange Shears ..... 50&10@50&20%
Grape ..... 40&10@50%
Tree Pruners 75%
P., S. & W. Co 33⅓%

Sheaves—Sliding Door—
Stowell's Anti-Friction 50%
Patent Roller, Hatfield's, Sargent's list ..... 70&10%
Reading 60%
R. & E. list 33⅓%
Wrightsville Hatfield Pattern 80%

Sliding Shutter—
Reading list ..... 45&20%
R. & E. list 33⅓%
Sargent's list ..... 50&10%

Shells—Shells, Empty—
Brass Shells, Empty:
First quality, all gauges ..... 60&5%
Climax, Club, Rival, 10 and 12 gauge ..... 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge ..... 25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge 20%
Climax, Union, League, New Rival, 10 and 12 gauge 25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list) 20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge ..... 33⅓&5%
Robin Hood, Low Brass ..... 20&10%
Robin Hood, High Brass ..... 30&10%

Shells, Loaded—
Loaded with Black Powder 40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass 50%
Comets, High Brass ..... 50&10&5%

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron ..... per keg $4.00
Steel ..... per keg $3.75
Burden's, all sizes ..... ℔ keg $3.90

Shot—
Drop, up to B, 25-lb. bag $1.65
Drop, B and larger ..... *per 25-lb. bag, $1.90*
Buck, 25-lb. bag $1.90
Chilled, 25-lb. bag $1.90

Shovels and Spades—
Association List, Nov. 15, 1902 ..... 40%

Sieves and Sifters—
Hunter's Imitation ..... *gro. $10.50@11.00*
Hunter's Genuine ..... *per gro. $12.00@12.50*
Buffalo Metallic Blued, S. S. Co., ℔ gr.:

14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00 ..... 20%

Sieves, Seamless Metallic

	Per dozen.			
Mesh	14	16	18	20
Iron Wire	$1.05	1.05	1.10	1.20
Tinned Wire	$1.15	1.15	1.20	1.30

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested ..... doz. $0.90@1.00
Mesh 20, Nested ..... doz. $1.00@1.05
Mesh 24, Nested ..... doz. $1.30@1.40

Sinks, Cast Iron—
Standard list ..... 60@60&10%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron ..... 80&10@80&10&10%
Steel ..... 40@40&10%

Slates, School—
Factory Shipments.
"D" Slates ..... 50@50&10%
Eureka, Unexcelled Noiseless ..... *60&5 tens*
Victor A, Noiseless ..... *60&½ tens &5%*

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German ..... 40@40&10%
Covert Mfg. Co.:
Derby ..... 30&5&2
High Grade 45
Jockey ..... 30&10
Trojan 45
Yankee ..... 30&5&2
Yankee Roller ..... 30&5&2
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
Oneida Community:
Solid Swivel 60%
Sargent's Patent Guarded ..... 66⅔&10%

Snaths—
Scythe ..... 45&10%

Snips, Tinners—See *Shears.*

Spoons and Forks—Silver Plated—
Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous—
German Silver ..... 60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver 50%

Tinned Iron—
Teas ..... *per gro. 45@50¢*
Tables ..... *per gro. $0.90@1.00*

Springs—Door—
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman (Coil) 20%
Reliance (Coil) ..... 40&10%
Star (Coil) 30%
Torrey's Rod, 30 in ..... ℔ doz. $1.10
Victor (Coil) ..... 50&10&10%

Carriage, Wagon, &c.—
1¼ in. and Wider: *Per lb*
Black ..... 4@4¼¢
Half Bright ..... 4@4¼¢
Bright ..... 4½@4¾¢
Painted Seat Springs:
1½ x 2 x 26 ..... *per pr. 42¢*
1½ x 3 x 28 ..... *per pr. 70¢*

Sprinklers, Lawn—
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24 ..... 30%

Squares—
Nickel plated ..... *List Jan. 5, 1900.*
Steel and Iron ..... 75@75&5%
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Sq. and T-Bevels 70%
Winterbottom's Try and Miter ..... 40&10@40&10&10%

Squeezers, Lemon
Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... *doz. $1.00*
Good Grade ..... *doz. $1.25*
Tinned Iron ..... *doz. $0.75@1.25*
Iron, Porcelain Lined ..... *doz. $1.75*

Staples—
Barbed Blind ..... lb. 6@6½¢
Electricians', Association list ..... 80&10&10&10%
Fence Staples, Plain, $2.25; Galvanized $2.75
Poultry Netting Staples ..... *per lb. 3¼@3½¢*
Grand Crossing Tack Co.'s list ..... 80&10%

Steels, Butchers'—
Dick's 30%
Foster Bros. 30%
C. & A. Hoffmann's 40%

Steelyards—.... 30@30&10%

Stocks and Dies—
Blacksmiths' ..... 50@50&10%
Curtis Rev'ble Ratchet Die Stock 30%
Derby Screw Plates 30%
Gardner Die Stocks No. 1 ..... 30%
Gardner Die Stocks, larger sizes 40%
Green River 30%
Lightning Screw Plate 30%
Little Giant 30%
Reece's New Screw Plates 30%

Stone—Scythe Stones—
Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ℔ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots ..... ℔ gro. $9.00
One gross or more ..... ℔ gro. $7.20
Lots of 10 gross or more ..... ℔ gro. $6.00

Pike Mfg. Co., 1901 list:
Black Diamond S. S., ℔ gro. $12.00
Lamoille S. S., ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.00
Green Mountain S. S., ℔ gro. $6.00
Extra Indian Pond S. S. ℔ gro. $7.50
No. 1 Indian Pond S. S. ℔ gro. $7.00
No. 2 Indian Pond S. S. ℔ gro. $4.50
Leader Red End S. S. ℔ gro. $4.50
Emery and Corundum, 10 in., ℔ gro. $9.00 — 33⅓%
Pure Corundum, 10 in., ℔ gro. $12
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%

Oil Stones, &c.—

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit..50%
Gem Corundum Axe, Single or Double Grit 55%
Gem Corundum Slips 55%
Gem Corundum Razor Hones 50%

Pike Mfg. Co., 1901 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. .60 ¢
Rosy Red Washita, 4 to 8 in. .60 ¢
Washita St., Extra, 4 to 8 in. 50 ¢
Washita St., No. 1, 4 to 8 in. 40 ¢
Washita St., No. 2, 4 to 8 in. 30 ¢
Lily White Slips ..... 90 ¢
Rosy Red Slips ..... 90 ¢
Washita Slips, Extra ..... 80 ¢
Washita Slips, No. 1 ..... 70 ¢
Washita Slips, No. 2 ..... 40 ¢ — 33⅓%
India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks. 33⅓%
Hindostan No. 1, R'g'lar. ℔ lb 8 ¢
Hindostan No. 1, Small.. ℔ lb 10 ¢
Axe Stones (all kinds) .....
Turkey Oil Stones, Extra, 5 to 8 in. ..... ℔ lb 80 ¢ — 33⅓%
Queer Creek Stones, 4 to 8 in. 20 ¢
Queer Creek Slips ..... 40 ¢
Sand Stone ..... 6 ¢
Belgian, German and Swaty Razor Hones 50%
Natural Grit Carving Knife Hones ..... ℔ doz. $3.00
Quick Edge Pocket Knife Hones ..... ℔ doz. $2.50 — 40%
Mounted Kitchen Sand Stone, ℔ doz. $1.50

Stoners, Cherry—

Enterprise ..... 25@30%

Stoppers, Bottle—

Victor Bottle Stoppers ..... ℔ gro. $9.00

Stops— Bench—

Millers Falls ..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00 ..... 50%
Morrill's, No. 2, $12.50 ..... 50%

Door—

Chapin-Stephens Co. ..... 60@60&10%

Plane—

Chapin-Stephens Co. 20%

Straps— Box—

Cary's Universal, case lots. .20&10&10%

Hame—

Covert's Saddlery Works ..... 60&10%

Stretchers, Carpet—

Cast Iron, 8½ Points. doz. 55@60%
Rocket ..... doz. $1.75
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00 ..... 20%

Stuffers, Sausage—

Enterprise Mfg. Co. ..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%

Sweepers, Carpet—

National Sweeper Co.: ℔ doz.
Auditorium, Roller Bearing (26 in. case), Nickel $54.00
Mammoth, Roller Bearing (30 in. case), Nickel $60.00
Marion, Roller Bearing, regular finishes, full Nickel $24.00
Marion Queen, Roller Bearing, full Nickel $24.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller B'r'g, Jap'ned. $20.00
Transparent, Roller Bearing, Plate Glass Top, Nickel $36.00
Monarch Extra, Roller Bearing, (17-in. case), Nickel $36.00
Monarch Extra, Roller Bearing (17-in. case), Japanned $33.00
National Queen, Fancy Veneers. $27.00
Perpetual, Regular B'r'gs, Nkl. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00

NOTE.—Rebates: 50¢ per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots

Tacks, Brads, &c.—

List Jan. 15, '99.

Carpet Tacks ..... 90&30&10@..%
American Cut Tacks .. 90&25@..%
Swedes Cut Tacks. 90&30&10&5@..%
Swedes Upholsterers' Tacks .... 90&45&10&5@..%
Gimp Tacks ..... 90&45&10@..%
Lace Tacks ..... 90&45&10@..%
Trimmers' Tacks. 90&30&10&5@..%
Looking Glass Tacks. 70&10&5@..%
Bill Posters' and Railroad Tacks ..... 90&45&10@..%
Hungarian Nails .... 80&30&5@..%
Common and Patent Brads .... 80&10&5@..%
Trunk and Clout Nails. 80&10@..%

NOTE.—The above prices are for Straight Weights. An extra 5% is given on Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—

Double Pointed Tacks ..... 90&6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list ..... 50&10@60%
See also Nails, Wire.

Tanks, Oil—

	Each
Emerald, S., S. & Co.	.30-gal. $3.40
Emerald, S., S. & Co.	.60-gal. $4.25
Queen City, S., S. & Co.	.30-gal. $3.65
Queen City, S., S. & Co.	.60-gal. $4.50

Tapes, Measuring—

American Asses' Skin..40&10@50%
Patent Leather ..... 25@30&5%
Steel ..... 40@40&10%
Chesterman's ..... 25@25&5%
Eddy Asses' Skin ..... 40&10@50%
Eddy Patent Leather ..... 25@30&5%
Eddy Steel ..... 30@40&10%
Keuffel & Esser Co.:
Favorite, Ass Skin ..... 40&10@50%
Favorite, Duck and Leather ..... 25&5@25&10%
Metallic and Steel, lower list ..... 35@35&5%
Pocket ..... 35@35&5%
Lufkin's Steel ..... 33⅓@35%
Lufkin's Metallic ..... 30@30&5%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger ... per 100 lbs. $3.00

Thermometers—

Tin Case ..... 80&10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop ..... 80&2½%
Monitor, Cross Head, &c 70%

Brick Ties—

Niagara Brick Ties ..... 25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works ..... 60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White ..... 20@20&5%

Hay—

Myers' Hay Tools 50%
Stowell's Hay Carriers 50%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 50%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro .... $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Oneida Pattern .. 75&10@75&10&5%
Newhouse ..... 45@45&5%
Hawley & Norton ..... 65@65&5%
Victor (Oneida Pattern) ..... 75@75&5%
O. C. Jump (Blake Pat.) .. 60&5@60&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ℔ doz. $13.25
No. 3, Rat, ℔ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ℔ doz. $5.25; case of 72 ℔ gro. $4.70 doz.
No. 4, Mouse, ℔ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ℔ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E I 50%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston " Standard Brand " and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ℔ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ℔ gro. $6.00
Never-Break Steel Garden Trowels. ℔ gro. $20.00
Rose Brick and Plastering ..... 25&5%
Woodrough & McParlin, Plastering. 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern ..... 50&10%
Western Pattern ..... 60&10%
Handy Trucks ..... ℔ doz. $16.00
Grocery ..... ℔ doz. $15.00
Daisy Stove Trucks, Improved Pattern ..... ℔ doz. $18.50
McKinney Trucks ..... each $10.00
Model Stove Trucks ..... ℔ doz. $18.50

Tubs, Wash—

No.	1	2	3
Galvanized, per doz.	*$4.75*	*5.25*	*6.00*

Galvanized Wash Tubs (S., S. & Co.):

No.	1	2	3	10	20	30
Per doz., net.	$5.70	6.30	7.20	6.60	7.20	8.10

Twine, Miscellaneous—

Flax Twine:	*BC.*	*B.*
No. 9, ¼ and ½-lb. Balls	*.22@24¢*	
No. 12, ¼ and ½-lb. Balls	*.18@20¢*	
No. 18, ¼ and ½-lb. Balls	*.16@18¢*	
No. 24, ¼ and ½-lb. Balls	*.16@18¢*	
No. 36, ¼ and ½-lb. Balls	*.15@17¢*	
Chalk Line, Cotton ½-lb. Balls	*.30¢*	
Cotton Mops, 6, 9, 12 and 15 lb. to doz	*.90@11¢*	
Cotton Wrapping, 5 Balls to lb., according to quality	*..13½@20¢*	
American 2-Ply Hemp, ¼ and ½-lb. Balls	*.13@14½¢*	
American 3-Ply Hemp, 1-lb. Balls	*.13@14½¢*	
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)	*.8¢*	
India 3-Ply Hemp, 1-lb. Balls.	*7@8¢*	
India 3-Ply Hemp, 1½-lb. Balls.	*6@7¢*	
2, 3, 4 and 5-Ply Jute, ½-lb. Balls	*.9@10¢*	
Mason Line, Linen, ½-lb. Bls.	*.46¢*	
No. 25½ Mattress, ¼ and ½-lb. Balls	*.37¢*	
Wool, 3 to 6 ply	*.5¾@16¢*	

Vises—

Solid Box ..... 50&10@60%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50; No. 3, $10.00.
Machinist and Tool Makers' No. 4, $12.50; No. 5, $7.00; No. 6, $10.00; No. 10, $21.50.
Jewelers' No. 7 ..... $4.00
Fisher & Norris Double Screw. .15&10%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co. ..... 20@30
Merrill's 20
Millers Falls ..... 60&10%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip 20%
Parker's:
Victor ..... 20@25%
Regulars ..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe ..... 55@60%
Prentiss ..... 20@25%
Sargent's 40%
Smith & Hemenway Co.:
Machinists' 40%
Jewelers' 33⅓%
Snediker's X. L. 33⅓%
Stephens' 33⅓%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz. $30 ..... 25%
Perfection Saw Clamps, ℔ doz. .. $5.00
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 ..... 45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise ..... 60&10%
Holland's Combination Pipe. .60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 60%
187 Series ..... 60&5%
No. 870 ..... 40%

Wads—*Price per M.*

B. E., 11 up ..... 60¢
B. E., 9 and 10 ..... 70¢
B. E., 8 ..... 80¢
B. E., 7 ..... 80¢
P. E., 11 up $1.00
P. E., 9 and 10 ..... 1.25
P. E., 8 ..... 1.50
P. E., 7 ..... 1.50
Ely's B. E., 11 and larger. $1.70@1.75
Ely's P. E., 12 to 20 .... $3.00@3.25

Dis. 15%

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled ..... 55&10@60%
Ground ..... 60&10@65%
Plain or Unground .. 65&10@70%
Country Hollow Ware, per 100 lbs. $2.50
White Enameled Ware:
Maslin Kettles 70%
Covered Wares
Tinned and Turned 40%
Enameled 50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware ..... 50&20%
Agate Nickel Steel Ware, Specials. 60&15%
Iron Clad Ware ..... 70&10%
Lava, Enameled ..... 40&10%
Never Break Enameled 50%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45¢*	*50¢*	*55¢*	*65¢*

Steel Hollow Ware—

Avery Spiders and Griddles. .65@65&5%
Avery Kettles 60%
Porcelained ..... 50&50&10%
Never Break Spiders and Griddles. 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles. 65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone .... 40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame. $3.00
Red Star, family size, stationary protector $3.00
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.65
Cable Cross, family size, stationary protector $2.90
Single Zinc Surface:
Naiad, family size, open back, perforated $2.40
Saginaw Globe, protector, family size, ventilated back $2.25
Brass Surface:
Brass King, Single Surface, open back $3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.00
Glass Surface:
Glass King, Single Surface, open back $3.00
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.00

Washers—Leather, Axle—

Solid ..... 80&10@80&10&10%
Patent ..... 90@90&5%
Coil: ⅞ 1 1¼ 1¼ Inch. 10¢ 11¢ 12¢ 13¢ per box

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers $5.00 4.10 2.80 2.60 2.40
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots ..... per lb. 1¾@2¢

Wedges—

Oil Finish ..... lb. 2.15@2.30¢

Weights—Hitching—

Covert Mfg. Co. ..... 40&2%
Covert's Saddlery Works ..... 60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District. . $22.50@24.00
Southern Territory. . $18.00@19.00
Western and Central Districts market unsettled, prices ranging from $17.50@19.00

Wheels, Well—

8-in., $1.50@1.55; 10-in., $1.65@1.70; 12-in., $2.25@2.35; 14-in., $3.40@3.50.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 ..... 80&5@80&7½%
10 to 18 ..... 80@80&5%
19 to 26 ..... 80&10@80&10&5%
27 to 36 ..... 80&5@80&10%
Galvanized:
6 to 9 ..... 77½@77½&5%
10 to 14 ..... 72½@72½&5%
15 to 16 ..... 75&7½@75&10&2½%
19 to 26 ..... 75&5@75&10%
27 to 36 ..... 72½&5@72&7½%
Coppered:
6 to 9 ..... 77½@77½&5%
10 to 14 ..... 77½@77½&7½%
15 to 18 ..... 75&10@75&10&2½%
19 to 26 ..... 75&10&5@80%
27 to 36 ..... 75@75&5%
Tinned:
6 to 14 ..... 77½@77½&7½%
15 to 18 ..... 75&5@75&10%
Annealed, Steel and Tinned, on Spools .. 70&10&10@70&10&10&10%
Brass and Copper on Spools .... 60&10@60&10&10%
Brass, list Feb. 26, '96 ..... 30&5%
Copper, list Feb. 26, '96 ..... 15%
Cast Steel Wire 50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, 1903. 90&10&10&10@..%

Wire Cloth and Netting—

Galvanized Wire Netting ..... 80&10@80&10&5%
Painted Screen Cloth, 100 ft., $1.10
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft. 3¢
Nos. 4 and 5 Mesh, sq. ft. .3½¢
No. 6 Mesh, sq. ft. ..... 3½¢
No. 8 Mesh, sq. ft. ..... 4¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural .... 75&10@75&10&10%
Alligator or Crocodile. . 70&10@75%
Baxter Pattern S Wrenches .. 70&5@70&10%
Drop Forged S ..... 45@45&5%
Acme ..... 60&10%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S 40%
Adjustable S Pipe 40%
Bemis Pipe 60%
Brigg's Pattern 40%
Combination Black ..... 40&5%
Combination Bright 40%
Merrick's Pattern 50%
Boardman's 33⅓%
Coes' Genuine Knife Hdl. .40&10&5&5%
Coes' Genuine Steel Hdl. .40&10&5&5%
Coes' Genuine Key Model. .40&10&5&5%
Coes' " Mechanics' " .. 40&10&10&5&5%
Donohue's Engineer ..... 40&10%
Eagle ..... 50&10%
Elgin Wrenches 40%
Elgin Monkey Wrench Pipe Jaws. 33⅓%
Gem Pocket 30%
Hercules 70%
W. & B. Machinist:
Case lots ..... 50&5%
Less than case lots 50%
Improved Pipe (W. & B.) 40%
Solid Handles, P., S. & W. .50@50&5%
Stillson 65%
Vulcan Chain 50%

Wrought Goods—

Staples, Hooks, &c., list March 17, '92 ..... 90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed. .70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters' ..... list net

Zinc—

Sheet ..... per 100 lbs., $6.75@7.00

CURRENT METAL PRICES.

NOVEMBER 30, 1904.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Refined Iron:
1 to 1¼ in. round and square } ₩ ℔ 1.75@1.80¢
1½ to 4 in. x ½ to 1 in. }
1½ to 4 in. x ¼ to 5-16 ₩ ℔ .... @1.95¢
Rods—¾ and 11-16 round and square ₩ ℔ 1.95 @2.00¢
Angles: Cts ₩ ℔
3 in. x ¼ in. and larger 2.00¢
3 in. x 3-16 in. and ⅛ in. 2.25¢
1¼ to 2½ in. x ¼ in. 2.05¢
1¼ to 2¾ in. x 3-16 in and thicker 2.00¢
1 to 1¼ in. x 3-16 in. 2.05¢
1 to 1¼ in. x ¼ in. 2.10¢
⅞ x ⅛ in. 2.25¢
¾ x ⅛ in. 2.35¢
⅝ x ⅛ in. 3.40¢
⅜ x 3-32 in. 3.90¢
Tees:
1 in. 2.45¢
1¼ in. 2.25¢
1½ to 2½ in. 2.15¢
3 in. and larger 2.20¢
Beams 3.00¢
Channels, 3 in. and larger 3.00¢
Bands—1½ to 6 x 3-16 to No. 8 ₩ ℔ 2.10¢
"Burden's Best" Iron, base price ₩ ℔ 3.05¢
Burden's "H. B & S. Iron, base price ₩ ℔ 2.85¢
"Ulster" ₩ ℔ 3.10¢
Norway Bars 3.25@3.75¢
Norway Shapes 3.75@4.25¢

Merchant Steel from Store—

per ℔

Bessemer Machinery 1.80¢
Toe Calk, Tire and Sleigh Shoe 2.00@2.50¢
Best Cast Steel, base price in small lots 7¢

Soft Steel Sheets—

¼ inch	2.15¢	No. 14	2.35¢
5-16 inch	2.20¢	No. 16	2.40¢
No. 8	2.25¢	No. 18	2.55¢
No. 10	2.25¢	No. 20	2.55¢
No. 12	2.30¢	No. 22	2.60¢

Sheet Iron from Store.

Black.

	One Pass, C. R. Soft Steel	R. G. Cleaned.
No 14	₩ ℔ 2.40	2.50¢
No. 16	₩ ℔ 2.45	2.60¢
Nos. 18 to 21	₩ ℔ 2.55	2.70¢
Nos. 22 to 24	₩ ℔ 2 60	2.80¢
Nos. 25 and 26	₩ ℔ 2.65	2.90¢
No. 27	₩ ℔ 2.70	3.00¢
No. 28	₩ ℔ 2.80	3.10¢

Russia, Planished, &c.

Genuine Russia, according to assortment ₩ ℔ 11¾@14¢
Patent Planished ₩ ℔ A, 10¢; B, 9¢, net

Galvanized.

Nos. 14 to 16 ₩ ℔, 2.85¢
Nos. 18 to 20 ₩ ℔, 3.05¢
Nos. 22 to 24 ₩ ℔, 3.25¢
No. 26 ₩ ℔, 3.45¢
No. 27 ₩ ℔, 3.70¢
No. 28 ₩ ℔, 3.95¢
No. 30 ₩ ℔, 4.85¢
No. 20 and lighter, 36 inches wide, 25¢ higher.

Foreign Steel from Store—

Best Cast ₩ ℔ 15 ¢
Extra Cast ₩ ℔ 18 @ 20 ¢
Swaged, Cast ₩ ℔ 16 ¢
Best Double Shear ₩ ℔ 15 ¢
Blister, 1st quality ₩ ℔ 13 ¢
German Steel, Best ₩ ℔ 10 ¢
2d quality ₩ ℔ 9 ¢
3d quality ₩ ℔ 8 ¢
Sheet Cast Steel, 1st quality ₩ ℔ 15 ¢
2d quality ₩ ℔ 14 ¢
3d quality ₩ ℔ 12 ¢
R. Mushet's "Special" ₩ ℔ 46 ¢
" " "Titanic" ₩ ℔ 19 ¢
Hobson's Choice XX Extra Best ₩ ℔ 35 ¢
Jessop Self Hardening ₩ ℔ 45 ¢
Seamans' "Nelson" Steel 40 ¢
Hobson's "Soho" Special Self-Hardening ₩ ℔ 43 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per ℔
Banca, Pigs	@30¼¢
Straits, Pigs	@30¼¢
Straits in Bars	@31¼¢

Tin Plates—

American Charcoal Plates.

Calland Grade:
IC, 14 x 20 $4.35
IX, 14 x 20 7.85
Melyn Grade:
IC, 14 x 20 5.85
IX, 14 x 20 7.10
Allaway Grade:
IC, 14 x 20 5.10
IX, 14 x 20 6.20

American Coke Plates—Bessemer—

IC, 14 x 20 ..... 108 ℔ $4.20
IX, 14 x 20 $5.20

American Terne Plates—

IC, 20 x 28 $8.30
IX, 20 x 28 $10.30

Copper—

DUTY: Pig, Bar and Ingot and Old Copper free. Manufactured, 2¼¢ ₩ lb.

Ingot—

Lake ..... 16 @16½¢
Casting ..... 15¾@16 ¢

Sheet and Bolt—

October 22, 1903. Net

Prices, in cents per pound.

Sheet 30 x 60.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz. 25 to 50 lb.	24 oz. to 32 oz. 18¾ to 25 lb.	18 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9½ to 11 lb.	10 oz. and 11 oz. 7¾ to 9½ lb.	8 oz. and 9 oz. 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	18	19	19	19	20	21	22	23	26
30	96	72	18	19	19	19	20	22	25	25	
30	.....	96	18	19	19	19	21	25			
36	72	.....	18	19	19	19	21	23	26	29	
36	96	72	18	19	19	19	21	25	28		
36	120	96	18	19	19	20	22				
36	.....	120	18	19	19	21					
48	72	.....	18	19	19	21	23	26	29		
48	96	72	18	19	19	22	24	27			
48	120	96	18	19	21	23	27				
48	.....	120	18	20	22	25					
60	72	.....	19	19	20	22	25	30			
60	96	72	18	19	21	23	26				
60	120	96	18	20	22	25					
60	.....	120	18	21	23	27					
72	96	.....	18	22	22	27					
72	120	96	18	21	24	29					
72	.....	120	19	22	27						
108	96	.....	19	22	25						
108	120	96	20	23	26						
108	.....	120	21	24	28						
wider than 108	132	.....	22	25							
	.....	132	23	24							

Circles, Segments and Pattern Sheets, 3¢ ₩ ℔ advance over price of sheet Copper required to cut them from.
Cold or Hard Rolled Copper, 14 oz. ₩ square foot and heavier, 1¢ ₩ ℔ over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ ℔ over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₩ ℔ advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ ℔ advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ ℔ more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ ℔ 23¢
12 oz. and up to 14 oz. to square foot, ₩ ℔ 24¢
10 oz. and up to 12 oz., ₩ ℔ 26¢
Lighter than 10 oz., ₩ ℔ 29¢
Circles less than 8 in. diameter, 2¢ ₩ ℔ additional
Circles over 13 in. diameter are not classed as Copper Bottoms.
Polished Copper Bottoms and Flats, 1¢ ₩ ℔ extra.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.
List Feb. 23, 1901.

Nos.	0000 to 8 Base	9 and 10		11 and 12
	½¢			¼¢ ₩ ℔ adv.
Nos.	13	14	15	16
	¾¢	¾¢	1¢	1¼¢ ₩ ℔ adv.
Nos.	17	18	19	20
	1¼¢	2¢	2¼¢	2¾¢ ₩ ℔ adv

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 19, 1904. Net. Outside Diameter.

Stubs' W.G.	B. & S. W.G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-21	3- 9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	18
22	10	.....	.....	.....	.....	.....	.....	24	24	23	23	18	18
23	11	.....	.....	.....	.....	.....	.....	25	25	23	23	18	18
24	12	.....	.....	.....	.....	25	25	25	23	23	23	19	19
25	13	.....	.....	.....	26	25	25	25	23	23	23	19	19
26	14	.....	.....	26	26	25	25	25	23	23	23	20	20
27	15	.....	29	26	26	25	25	25	23	23	23	21	21
28	16	49	31	27	27	26	26	26	24	24	24	22	22
29	17	58	31	27	27	26	26	26	24	24	24	23	23
30	18-19	60	31	27	27	26	26	26	24	24	24	24	24
31	20	62	47	29	28	28	26	25	25	25	25	25	25
32	21	67	52	31	31	29	29	27	26	26	26	26	26
33	22	72	57	33	33	31	31	29	29	29	29	29	29
34	23	77	62	42	44	42	41	41	39	37	36	36	37
35	24	82	67	52	47	45	43	42	41	40	40	41	42

Copper Bronze and Gilding Tube, 3¢ ₩ ℔ additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	23	23	25	27	28	₩ ℔

Copper, Bronze or Gilding Tubes, 3¢ ₩ ℔ additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) June 6, 1898.
Brown & Sharpe's gauge standard.

Per ℔.

Plain Round Tube, ¾ in. up to 2 in.				$0.35
" " "	⅝	"	¾ "	.36
" " "	½	"	⅝ "	.38
" " "	7-16	"	½ "	.41
" " "	5-16	"	7-16 "	.48
" " "	¼	"	5-16 "	.65
" " "	3-16	"	¼ "	1.00
" " "	⅛	"	3-16 "	1.50
Smaller than ¼ inch				Special
⅛ inch to 3 in. in. to No. 19, inclusive				.38
3 inch				.40
Over 3 inch to 3½ inch, inclusive				.45
Over 3½ inch				.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list 25%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	2	12	14	16	18	20	22	24	
and including	12	14	16	18	20	22	24	26	
To No. 20 inclusive	.22	.23	.25	.27	.29	.31	.33	.36	
Nos. 21 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37	
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38	
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39	

Common High Brass	in.	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	26	28	30	32	34	36	38	40	
and including	28	30	32	34	36	38	40		
To No. 20, inclusive	.39	.42	.46	.50	.55	.60	.65	*	
Nos. 21, 22, 23 and 24	.40	.43	.47	.51	.56	.61	.68		
Nos. 25 and 26	.41	.44	.48	.52	.57	.63	.71		
Nos. 27 and 28	.42	.45	.49	.53	.58	.65	.75		

* Special prices not less than 80 cents.
Add ¼¢ ₩ ℔ additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List 25%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive	$0.23	$0.27	$0.28
Above No. 10 to No. 16	.23¼	.27¼	.28¼
No. 17 and No. 18	.24	.28	.32
No. 19 and No. 20	.25	.29	.33
No. 21	.26	.30	.34
No 22	.27	.31	.35
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2.00	2.00	3.25
No. 40	2.60	2.60	5.75

Discount, Brass Wire, 25%; Copper Wire, NET.
List November 16, 98.
Spring Wire, 2¢ ₩ ℔ advance.

Tobin Bronze—

Straight, but not turned, Rods, ⅜ to 3 in. diameter, ₩ ℔. net 18¢
Finished Piston Rods, ⅜ to 2½ in. diameter, ₩ ℔ net, 19¢
Other sizes and extreme lengths, special prices.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ ℔
Western Spelter .6 @6¼¢

Zinc.

Duty: Sheet, 2¢ ₩ ℔.
No. 9, base, casks 7¼¢ | Open per, ℔ 7¾¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ ℔. Pipe and Sheets, 3½¢ ₩ ℔.
American Pig 5 @5¼¢
Bar 5¼@6 ¢
Old Lead in exchange, 3½¢ ₩ ℔

Solder.

½ & ¼, guaranteed 19 @19½¢
No. 1 17 @17½¢
Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.

Cookson ₩ ℔ 10 @11 ¢
U. S 9½@10 ¢
Hungarian 8½@8¾¢

Aluminum—

Duty: Crude, 8¢ ₩ ℔. Plates, Sheets, Bars and Rods, 13¢ ₩ ℔.
No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots ₩ ℔ 37¢
100-℔ lots ₩ ℔ 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots ₩ ℔ 34¢
100-℔ lots ₩ ℔ 33¢
Aluminum Sheet, B. & S. gauge. 50 ℔ or more

	6-in. and including	14-in. and including	24-in. and including	30-in.
	₩ ℔.	₩ ℔.	₩ ℔	
Nos. 13 to 19	$0.42	$0.44	$0.46	$0.47
No. 20	.44	.46	.49	
Nos. 21 to 23	.46	.48	.51	
No. 24	.46	.50	.53	
No. 25	.47	.51	.54	
No. 26	.47	.54	.59	
No. 27	.48	.57	.62	
No. 28	.48	.57	.64	
No. 29	.49	.60	.69	
No. 30	.50	.64	.77	

Note.—Lots of less than 50 ℔ 5¢ ₩ ℔ extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9	₩ ℔ 40¢	No. 15	₩ ℔ 43¢
No. 9 to No. 10	₩ ℔ 40½¢	No. 17	₩ ℔ 50¢
No. 11	₩ ℔ 41 ¢	No. 18	₩ ℔ 55¢
No. 12	₩ ℔ 41½¢	No. 19	₩ ℔ 60¢
No. 13	₩ ℔ 42 ¢	No. 20	₩ ℔ 65¢
No 14	₩ ℔ 42½¢	No. 21	₩ ℔ 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper ₩ ℔ 12½¢
Light and Tinned Copper ₩ ℔ 11½¢
Heavy Brass ₩ ℔ 8 ¢
Light Brass ₩ ℔ 6½¢
Lead ₩ ℔ 4 ¢
Tea Lead ₩ ℔ 3½¢
Zinc ₩ ℔ 4 ¢
No. 1 Pewter ₩ ℔ 19 ¢
No. 2 Pewter ₩ ℔ 8½¢
Pure Aluminum, Sheet ₩ ℔ 21¢
Cast Aluminum ₩ ℔ 16¢
Tin Plate scrap ₩ ton $ @5 00
Wrought Scrap Iron ₩ gross ton $10.50@11.00
Heavy Cast Scrap ₩ gross ton $11.00@11 50
Stove Plate Scrap ₩ gross ton $8.00@ 9.00
Burnt Iron ₩ gross ton $6.50@ 7.00